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Gleanings in Bee Culture



Wounded Veterans of the World's War Studying Beekeeping at the U. S. Government's Apiary at Washington, D. C. Dr. Phillips is Instructing.

VOL. XLVIII

July, 1920

NUMBER 7

WAREHOUSE JUST BEING COMPLETED TO
STORE YOUR HONEY

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Honey Crop

We will buy it, both Comb and Ex-
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These cans used only once, packed
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THE A. I. ROOT COMPANY
OF CALIFORNIA

1824 EAST 15th ST.
LOS ANGELES, CALIF.

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THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

Editorial Staff

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Editor Editor Home Dept. Assistant Editor Managing Editor

Order Your Bee Supplies Now

25 per cent Discount

on Shipping Cases --- as long as our
stock lasts---Flat cases---2-inch glass
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	CATALOG PRICES		CUT PRICES	
	100 lots	25 lots	100 lots	25 lots
4 1/4 x 17/8	\$50.00	\$13.00	\$37.50	\$10.75
4 1/4 x 1 1/2	48.00	12.50	36.00	9.38
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Lewis Section Squeezers . . .	\$4.80 each		\$3.60 each	
Frame Wedge Drivers	1.25 each		.94 each	

We are overstocked on the above supplies and offer them at 25% reduction while they last. Send your order AT ONCE.

They are All LEWIS BEEWARE

You had better order a "MUTH IDEAL BEE VEIL" than be sorry. . . \$1.60 each, postpaid.

Best Prices Paid for Honey

Send us samples of your honey and we will quote you a price equal to or better than that of any other concern. We buy and sell both comb and extracted honey. Cash remitted in full the same day shipment is received.

Beeswax Rendered from Old Combs

We pay you the highest market price for rendered wax., less 5 cts. per pound rendering charge. Our special hydraulic steam wax press gets the very last drop of wax from the old combs and cappings, assuring you maximum profit on them. Write for full particulars

THE FRED W. MUTH CO.
"THE BUSY BEE MEN"

CINCINNATI, O

HONEY CANS

Several cars just unloaded at our Ogden, Utah, and Idaho Falls, Idaho, warehouses ; more coming. We have anticipated the heavy demand and can fill your orders promptly. Avoid congested supers and loss of honey by ordering early.

SUPERIOR FOUNDATION

We are keeping pace with the enormous demand. For real quality specify "SUPERIOR" foundation. If your dealer cannot supply you write us for special prices.

BEESWAX

We are still paying top prices. "Everything in Bee Supplies."

Superior Honey Company -:- Ogden, Utah
(MANUFACTURERS OF WEED PROCESS FOUNDATION)

BEE SUPPLIES

BEE SUPPLIES

SERVICE & QUALITY

Order your supplies early, so as to have everything ready for the honey flow, and save money by taking advantage of the early order cash discount. Send for our catalog--better still, send us a list of your supplies and we will be pleased to quote you.

C. H. W. WEBER & COMPANY

2146 CENTRAL AVE.

CINCINNATI, OHIO

HONEY MARKETS

The honey market is not stronger than last month, and large buyers report offerings at somewhat lower figures than a month ago. The Bureau of Markets' report, date of June 15, printed below, seems as a whole to confirm the buyers' statement, altho honey retains a strong market position. In the press there is considerable talk of Government action to reduce sugar prices. An embargo on all sugar export from the United States is one of the announced plans of the Department of Justice to relieve the nation-wide sugar shortage, which has lent largely to high prices for honey. This possibility of Government action to curb sugar prices has doubtless had some reaction on the honey market.

U. S. Government Market Reports.

TELEGRAPH REPORTS FROM IMPORTANT MARKETS.

(In many markets the term "jobber" is commonly applied to the original receiver who buys direct from the grower in carlot quantities. However, we use the term "wholesale carlot receiver" to designate the carlot purchaser, while the term "jobber" refers to the dealer who buys in less than carlot quantities from the carlot receiver and who sells direct to retailers. The prices quoted in this report, unless otherwise stated, represent the prices at which the "wholesale carlot receivers" sell to the "jobbers." Arrivals include receipts during preceding 2 weeks. Quotations are for June 14, unless otherwise stated.)

BOSTON.—No arrivals since last report. Demand and movement limited market firm. Sales to jobbers, per lb., extracted; Californias, sage, few sales 22-24c. Comb, no sales reported.

CHICAGO.—Supplies moderate, less than carload receipts of Australian, Cuban, Hawaiian; domestic receipts very light. Demand and movement moderate, market dull. Sales to jobbers, per lb., extracted, Oklahomas, Colorados, Californias, white 20-22c, light amber 19-20c, imported dark amber 15c. Comb, no sales reported. Beeswax, receipts increasing, much foreign wax being offered. Demand and movement slower, market weaker. Missouri, Oklahomas, Colorados, light 43-45c, dark 40-41c.

CINCINNATI. (June 15)—1 car Nebraska, 1 car Wyoming arrived. Demand good, movement light, market steady. Sales to jobbers, per lb., extracted, Western, white 20-21c. Beeswax, demand and movement moderate, market weaker. Average yellow 42-44c.

CLEVELAND.—Supplies very light, demand good, movement limited. Sales to jobbers, per lb., extracted, Western, 60-lb. cans light amber 22-23c, white clover 25-26c.

KANSAS CITY.—Supplies moderate, demand and movement moderate, market steady. Sales to jobbers, comb, 24-section cases Western, light, No. 1, \$7.00-7.50. Extracted Western, white sage 24c, light amber 15-17c per lb. Beeswax, mostly 55c per lb.

MINNEAPOLIS.—Demand and movement light, market firm. Sales direct to retailers, comb, supplies cleaning up, too few sales to establish market. Extracted, supplies light. Western, 60-lb cans light amber 21-23c per lb.

NEW YORK.—Approximately 25,000 lbs. Georgia arrived since last report. Supplies light, demand and movement limited, market steady. Sales to jobbers and large wholesalers, extracted, domestic, per lb., Californias, light amber alfalfa 19-21c, mostly 20c; white orange blossom 21-23c, mostly 21½-22c; white amber sage 21-22c. West Indies, refined, \$1.70-\$2.00, mostly \$1.85-1.90 per gal. Comb, supplies very light. Californias, 24-section cases mostly \$6.50. Beeswax, no domestic arrivals reported, demand and movement limited, market steady. Sales to jobbers and large wholesalers, per lb., South American and West Indian, light 40-42½c, mostly 40c, dark 34-37c. African, crude, light 32-33c, dark 30-31c.

PHILADELPHIA. (June 15).—Since last re-

port, approximately 800 gallons Porto Rico, 3,000 lbs. Florida arrived. Demand and movement light, market strong. Sales to jobbers, Western, light 19½c per lb. Sales direct to retailers, Porto Rican, light amber \$2.29 per gallon; Floridas, extra light 24c per lb.

ST. LOUIS. (June 15).—No arrivals. Supplies light, demand and movement slow, market steady. Sales to jobbers, old stock, extracted, in cans, Southern, light amber 16-17c per lb.; dark 15-16c. Comb, no sales. Beeswax, 35-36c per lb.

ST. PAUL.—Supplies very light, demand and movement slow, market dull. Too few sales to establish market.

LOS ANGELES, CALIF.—Unreported.

George Livingston
Chief of Bureau of Markets.

Special Foreign Quotations.

LIVERPOOL.—Since our last report there has been a little more movement in this article, which was only to be expected seeing the scarcity of sugar and the advance of it in price. Still, we cannot say that honey has in any way responded as one would have expected it to have done, for we can only report a small advance on the prices last quoted. It would appear that as long as people can obtain sugar at any price they are so conservative that they will not increase their use of honey.

125 packages sold in London out of 826 packages offered, and in Liverpool about 1100 packages were disposed of.

There has been no Californian quality offering. The value of extracted honey in American currency we reckon to be 14 to 15 cents per lb.

BEEWAX. The market has remained very quiet indeed. The value in American currency for good quality we make to be about 38 cents per lb. Taylor & Co.

Liverpool, England, June 4, 1920.

CUBA.—I quote honey today at \$1.40 to \$1.50 per gallon; yellow wax, \$37.00 per cwt.

Adolfo Marzol.

Matanzas, Cuba, June 7, 1920.

Opinions of Producers.

Early in June we sent to actual honey-producers in the southern part of the country the following questions:

1. What is the source or sources of your first surplus honey flow?
2. Has this first crop now been harvested?
3. How does the crop compare with the normal crop?
4. What proportion of the entire season's crop is now harvested?

Answers, as condensed by the Editor, are as follows:

LOUISIANA. — Better than normal crop from willow, tupelo, and white clover now harvested; white clover still blooming; one-third of season's crop harvested.—E. C. Davis.

GEORGIA.—Two-thirds of normal crop from poplar, gallberry, blackberries, black gum, titi, and black tupelo now nearly harvested; about one-half of season's crop now secured, with bay, cotton, peas, velvet beans, and Mexican clover coming in late summer.—F. M. Baldwin.

GEORGIA.—One-third of normal crop mainly from gallberry, mixed with some tupelo, harvested in my 525 colonies in the counties of Miller and Early; two-thirds of my season's crop harvested.—N. L. Stapleton.

GEORGIA.—Not over one-half (nearer one-third) normal crop from titi, black gum, tupelo gum, poplar, and gallberry harvested; nine-tenths of season's crop harvested.—J. J. Wilder.

FLORIDA.—Crop much below normal from citrus bloom harvested; about 20 per cent of season's crop harvested.—Harry Hewitt.

LOUISIANA.—Three-fourths of normal crop from willow, thistle, blackberry, locust, and clover, but not sufficient to give a surplus. Practically none of season's crop from surplus sources harvested. Principal honey flowers in the fall from goldenrod, smartweed, and a little Mexican vine that grows in low damp places.—G. O. Pharr.

LOUISIANA.—Better than normal crop from willow, tupelo, and other sources already harvested and splendid flow continues; about one-half of season's crop harvested; crop will be smaller than usual, the colonies being only one-half the normal number and weaker than usual at the opening of the flow.—J. B. Marshall.

SOUTH CAROLINA.—Four-fifths of normal crop from crimson clover and poplar harvested; one-half of season's crop harvested.—H. O. Entrekin.

FLORIDA.—Crop much below normal from pennyroyal, orange, and saw palmetto harvested. In the counties of DeSoto, Lee, and Manatee the crop is practically a failure.—Ward Lamkin.

FLORIDA.—Eight to ten per cent of normal crop from orange, saw palmetto, and bay harvested. One-third to one-half of season's crop harvested.—C. H. Clute.

ALABAMA.—First surplus is from sweet clover, which has just begun to bloom. None of crop as yet is harvested.—J. M. Cutts.

NORTH CAROLINA.—Three-fourths of normal crop from tupelo and other gums, holly, gallberry, and tulip - poplar harvested; three-fifths of season's crop harvested.—C. L. Sams.

TEXAS, south-central and southwest. — Fifteen per cent above normal crop from huajilla and horse-mint harvested; one-half of season's crop harvested.—H. B. Parks.

EAST TEXAS.—Normal crop from sumac, Spanish mulberry tree, and horse-mint just being gathered.—T. A. Bowden.

TEXAS.—Crop above normal from huajilla and catclaw harvested; one-half or more of season's crop harvested.—J. N. Mayes.

NEW MEXICO.—Bees and honey plants in very satisfactory condition.—Smith & Gunter.

NEW MEXICO. — Prospects good for medium crop. Alfalfa is source of first surplus flow. But little, if any, honey expected before July 15.—Geo. E. Dudley.

ARIZONA. — First bloom of mesquite yielded practically nothing. Long-staple cotton has taken the place of alfalfa, and so far has proved of little value for honey.—E. Draper.

OKLAHOMA.—Loss 60 per cent in Oklahoma County; colony condition very poor, plants extra good; prospects are fine.—D. E. Barker.

CALIFORNIA.—Crop below average from orange in this locality harvested; 80 per cent of season's crop harvested.—A. E. Lusher.

CALIFORNIA.—Normal crop from orange, black sage, and mesquite harvested; 25 per cent of season's crop harvested.—L. L. Andrews.

Special Notices by A. I. Root

THE NEW ANNUAL SWEET CLOVER UP TO DATE.

Today is June 24, and I have been hoping to get something in this issue still later from the new sweet clover in Bradentown, Fla., but it has not yet come. Below is a letter that I think will be read with much interest:

Mr. Root:—I wish to thank you for the sweet clover seed you sent me last year. I planted them in April in a plot about 20 ft. square. Last year it grew about 3 feet, this year it is now 7½ feet high and in full bloom, the finest I ever saw and attracts everybody's attention for no one has ever seen the like. I hope to gather lots of seed and be able to sow a much larger plot in September.

Bees are very busy from 10 a. m. until dark before they all leave.

I fertilized this plot with cow manure and use nothing else. The ground was in cotton the year before.

Bees are doing fine this season much better than last. Yours very truly,

L. J. DAVISON.

York, S. C., June 21, 1920.

I shall have to confess I can not quite make out from the above whether the plant stood thru the winter down in South Carolina or whether the writer saved the seed in

the fall and sowed it in April of this year. Perhaps he will tell us later.

OVER 1000 BUSHELS OF POTATOES FROM ONE ACRE.

On page 325 of our June issue I said we expected to give you the particulars in regard to this wonderful crop of potatoes in this issue, but I am sorry to tell you it had to be omitted; but we expect to give it with two illustrations in our August issue.

CARE OF THE FEET; CORN REMEDIES, ETC.

On pages 610, 611, September, 1919, I had quite a little to say about remedies for corns. At the present writing, June 24, I am getting better results (and I have tried almost everything advertised) with the Foot Remedy Company's corn-plaster (Millard and Ogden Ave., Chicago) than with anything else. Aside from the above I am wearing a larger shoe than I have worn for years. This shoe is made of fine soft leather, and in each one is a good thick cork insole. Wherever I have been troubled with corns on the bottom of my feet I have cut away this insole. Then I am very careful to have very soft stockings, and to be sure, when putting them on, that there be no wrinkles, especially around or near the toes. If there is to be a wrinkle anywhere let it be back of the heel; then when the weather is bad and muddy I wear suitable arctic overshoes, and thus avoid getting my feet soaking wet.

Advertisements Received too Late to Classify

WANTED.—Position in bee-yard, by man with some experience, but wishing to learn more. Steady and industrious. Ready to leave at once.

Alex Marnor, 214 Fuller St., East Akron, O.

FOR SALE.—Root Improved wax-press, used once, good as new, \$10.00 takes it.

C. D. Doane, Otisville, Mich.

FOR SALE.—10 colonies Italian bees, Root strain, on Hoffman self-spacing wired frames. Combs drawn from full sheets foundation in 8-frame dovetailed hives, new last year and painted. Guaranteed free from disease. Price, \$15.00 each.

John E. Everett, Bound Brook, N. J.

FOR SALE.—Just as they come about 40 yearling clipped queens, \$1.00 each and provisioned cage to be sent by buyer. A few two-year old, same price. Have had queens from Doolittle, Moore, Laws, Lockhart, Bates, Bankston, and others, but never got one that averaged any better than ones I raise myself, except one from Doolittle about 30 years ago. Virgins after Aug. 1, 50c. No circulars. S. B. Post, Locust Land Apiaries, Box 65, Rt. 6, Washington, Pa.

BEES

We furnish full colonies of Italian bees in double-walled hives, single-walled hives, shipping-boxes, and three-frame nucleus colonies.

I. J. STRINGHAM, GLEN COVE,
Nassau Co., N. Y.

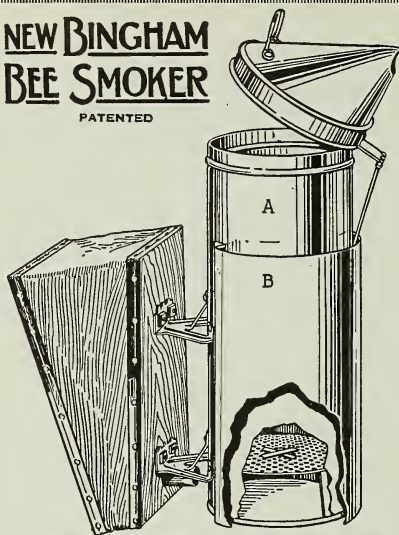
Queens--Rhode Island--Queens

Italian Northern-bred queens. Very gentle and hardy. Great workers. Untested, \$1.25 each; 6 for \$7.00. Circular on application. Queens delivered after June 1.

O. E. Tulip, Arlington, Rhode Island
56 Lawrence Street

NEW BINGHAM BEE SMOKER

PATENTED



The Bingham Bee Smoker has been on the market over forty years and is the standard in this and many foreign countries.

			Size of stove	shipping weight price inches lbs.
Big Smoke, with shield	4	x10	3	\$2.50
Big Smoke, no shield	4	x10	3	2.00
Smoke Engine	4	x7	2 1/4	1.50
Doctor	3 1/2	x7	2	1.15
Conqueror	3	x7	1 1/4	1.00
Little Wonder	3	x5 1/2	1 1/2	.80
Smoke Engine or Doctor, in copper, \$1.00 extra.				

The Big Smoke has just been produced in response to a demand for a larger-size smoker, one that will hold more fuel, require filling less often, from extensive bee handlers.

Conneaut, O.

A. G. Woodman Co.,

Dear Sirs:—The Big Smoke Smoker received and is satisfactory. It is just what I have been wanting for 10 years.

W. Klabuhn & Sons.

East Lansing, Mich., May 10, 1920.

A. G. Woodman Co., Grand Rapids, Mich.

Dear Mr. Woodman:—I have now had several weeks' opportunity to try out the New Smoker called the Big Smoke, with the guard about the fire pot. The smoker is even more than I anticipated and unless something else is brought out that is still better, you can be assured that this particular one will be standard equipment for this place from now on.

B. F. Kindig,

State Inspector of Apiaries.

The Genuine Bingham Honey Uncapping Knife is manufactured by us here at Grand Rapids and is made of the finest quality steel. These thin-bladed knives, as furnished by Mr. Bingham, gave the best of satisfaction, as the old timers will remember.

The Woodman Section Fixer, a combined section press and foundation fastener, of pressed steel construction, forms comb-honey sections and puts in top and bottom foundation starters, all at one handling. It is the finest equipment for this work on the market.

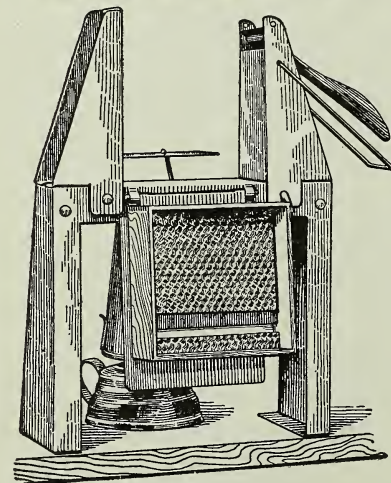
TIN HONEY PACKAGES.

2	lb. Friction top cans, cases of 24
2	lb. Friction top cans, crates of 612
2 1/2	lb. Friction top cans, cases of 24
2 1/2	lb. Friction top cans, crates of 450
5	lb. Friction top pails, cases of 12
5	lb. Friction top pails, crates of 100
5	lb. Friction top pails, crates of 200
10	lb. Friction top pails, cases of 6
10	lb. Friction top pails, crates of 100

Ask for our special money-saving prices, stating quantity wanted.



THUMB REST



A. G. Woodman Co., Grand Rapids, Mich., U. S. A.

Seasonable Suggestions:

Hoffman frames with 1 1-2-in. spacing supplied for either standard or Jumbo depth. Write us if interested.

Note that packages weighing up to 70 pounds may be sent by parcel post. If you are on an R. F. D. route it is often cheaper than express or freight on quite large shipments. We make a specialty of quick service on all such orders.

We want beeswax. We pay the highest market price. How much have you?

We supply Root's goods in Michigan. They are best known for their good quality. Our part is quicker and cheaper service.

Beginners' outfits either with or without bees. Our best equipment included with them. See pages 51-54 of the new catalog.



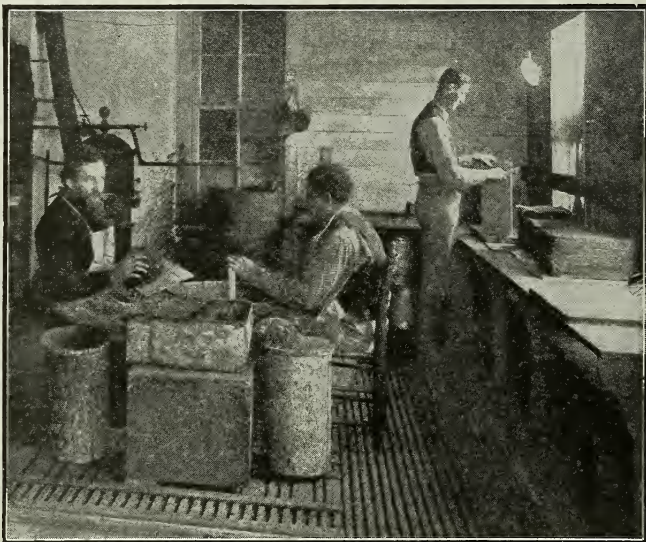
M. H. Hunt & Son

510 North Cedar Street
Lansing, Michigan

DADANT'S FOUNDATION WAS FIRST MADE BY HAND

Many are unacquainted with the method of making bee comb-foundation by hand. To these the following sketch of how DADANT'S FOUNDATION was first made may be interesting.

It was first necessary to get thin, plain sheets of beeswax. This was done by the dipping process. Smooth plain boards, after being wet, were dipped into the hot beeswax, then hung up to cool for a moment, when the edges were trimmed, and the flat sheets on both sides piled up and set away to cool.



"Dipping"—the first process in the making of foundation.

These piles were now cut up into sheets just as wide as the foundation was to be, and after being tempered in water were run through the milling machine, or moulder, which gave the impression of the comb. Soap was and is still used on these mills to keep the foundation from sticking.

Another trimming with a sharp soaped knife and the piles of DADANT'S FOUNDATION were ready for ever careful papering and boxing for the customer.

DADANT'S FOUNDATION (Every inch, every pound, every ton equal to any sample we have ever sent out.) :: :: :: ::
Specify it to your dealer. If he hasn't it write us.

DADANT & SONS, HAMILTON, ILL.

CATALOG AND PRICES OF BEE SUPPLIES, BEESWAX, WAX WORKING INTO COMB FOUNDATION AND COMB RENDERING FOR THE ASKING

GLEANINGS IN BEE CULTURE

JULY, 1920

EDITORIAL

IN MANY STATES sweet clover is classed among the noxious weeds; and until quite recently the law in several States was such that road supervisors might enter a farmer's



Help Prevent Early Cutting of Sweet Clover.

fields and cut sweet clover that he himself had sown. Even now the supervisors in many places are ordered to cut it along the roadsides and vacant lots before it blooms.

Gleanings has often regretted the unnecessary waste caused by the cutting of sweet clover before blooming, and has urged beekeepers to use their influence in having such sweet-clover laws repealed, and to prevail on city councils to allow sweet clover to grow till after bloom. We have received several letters from different ones who have succeeded in getting their city councils to allow sweet clover to remain until after blooming.

R. D. Burnham of Champaign, Ills., who in 1918 was county food administrator for his county, found the road commissioners willing to let the sweet clover come to bloom. He wrote us stating that, as a result of the action taken in regard to the conservation of sweet clover, one beekeeper who had ten colonies of bees extracted an average of over 124 pounds. All this shows that it is decidedly worth while for beekeepers to bring before the proper authorities the constantly increasing importance of sweet clover as a honey plant and to exert their influence for the repeal of all objectionable sweet-clover laws.



WHILE THE PAST winter was very hard on bees, the heaviest losses occurred in the spring months, particularly in March and April. The Government reports likewise show



Losses Greater than at First Reported.

heavy losses all over the country and then add: "The winter's experience provides ample proof of the efficiency and economy of adequate winter protection;" and they might have added that extracting close and the inability to get sugar were very important contributing causes in the great mortality of bees thruout the country.

The package men report that the demand for bees is the greatest they have had in all of their experience. Colonies and whole apiaries of bees are bringing high prices.

How far this general shortage of bees, due to winter and spring losses, will affect the total amount of honey in the United States can not at this time be determined. In many sections of the East, clover is showing up the best it has for years, and, if there had been bees to gather the crop, there would have been a big yield of clover honey. There may be anyway, as late reports from the East tell of bees' having built up exceedingly well during late May and early June.



EXPERIENCE IS beginning to show that bees sent in combless packages where the light is excluded, go thru in better shape than in the usual open wire-



Exclude the Light.

cloth cages. A two- or three-frame nucleus box, wire-cloth top and bottom, containing frames of foundation, is better than an ordinary wire-cloth cage, provided that the nucleus has a wooden cover about an inch above the wire cloth on top to shut out the excess of light. The main point is that the sides of the case should be closed with wood. Thousands of pounds of bees have been shipped from the South to the North this last spring. The weather was so cool most of the time that practically all the shipments went thru in good order, regardless of whether light was excluded from the package or not; but this was because the weather favored. If these same shipments had been made in hot weather, the bees in the open-wire cages, we believe, would have suffered severely.



WE WISH to emphasize what we said in our last issue that beekeepers all over the



Warning.

country, north, south, east, and west, should reserve enough combs of good honey for winter stores out of their surplus, as there is every probability that sugar will not be available this fall for winter food. To say

the least, it is very wise to play safe by holding in reserve honey stores which can be sold in the event that there is a fall flow or that it will be possible later on to secure sugar.

But, even if it is possible to get it, the price may be higher than sealed honey in combs. The heavy loss of last winter and spring was due in part to the fact that beekeepers could not obtain sugar late last fall. Do not let that experience be repeated.

For outdoor wintering the opinion is growing that stores of good honey are better than sugar syrup. For indoor or cellar wintering sugar stores are better than natural stores, but for the period of confinement only. After that, honey is undoubtedly better.



THE DEPARTMENT of Agriculture at Washington has just issued a new bulletin



Beekeeping in Buckwheat Regions

on buckwheat, which will be of interest to the beekeepers of those sections of the country where this plant is extensively grown. It may be had free on request by asking for Farmers' Bulletin 1062. The bulletin is written by Dr. Clyde E. Leighty of the Bureau of Plant Industry, who has evidently had considerable experience with this plant.

Of special interest to beekeepers is the brief discussion entitled "Buckwheat as a Honey Plant." A few sentences from this section are worth quoting. "It is estimated that an acre of buckwheat growing under good conditions may supply as much as 150 pounds of honey in a season." "Commercial beekeeping in buckwheat-growing sections is advisable, as bees can make use of the flowers produced and may in turn be of use in fertilizing the flowers. Many buckwheat-growers, in fact, believe that the weight per bushel of seed is heavier where the crop has been worked largely by bees." This gives an official endorsement to beekeeping in this region, which should serve the beekeepers of the region in good stead when they are looking for out-apiary locations. It is also in harmony with the experience of beekeepers, as the average amateur, unfamiliar with European foul brood, has a hard time of it in the buckwheat region. Thousands of colonies are put out of commission every year from this disease, and it is unsafe to recommend anything but extensive beekeeping in that section.

"The great need in such localities, however, is for a honey plant coming on earlier in the year than buckwheat; as, otherwise, European foul brood is sometimes very destructive. Alsike clover, sweet clover, winter vetch, and, in the more southern regions, crimson clover offer possibilities in this direction."

We do not understand the author to advocate the growing of these plants for honey

alone. In the first sentence just quoted the author has hit upon the great weakness of the buckwheat region; for the honey flow from this plant, coming as it does after the season for European foul brood, allows the colonies to be depleted by disease. Naturally, it is outside the province of this bulletin to give the remedy for this condition. It lies in keeping the bees in such shape that they are ready for white and alsike clovers when they come into bloom. This is, in itself, a paying proposition. The great thing is to have the colonies so strong in the spring that European foul brood does not have a chance. There is probably no region in the country where annual requeening with Italian stock and the best of care in winter are so important as in the buckwheat section. To the thoroly experienced beekeeper of the buckwheat region European foul brood has no terrors, but there are not enough beekeepers of this kind. This Farmers' Bulletin is one which every beekeeper of the buckwheat areas will want to have for reference and for distribution among his neighbors.



WITHIN THE LAST few months the price of sugar has been soaring and it is still going up.



Sugar and the Honey Market.

In some sections it has been bringing from 25 to 35 cents a pound, and there is a possibility that it may reach a higher figure still. In the meantime we hear of certain profiteers on sugar being arrested, and other sugar-curbng activities. Why sugar has gone up, or whether the government could have stopped it, or whether politics will protect the profiteer, is not necessary nor pertinent to discuss here. As Grover Cleveland used to say, "It is a condition, not a theory, that confronts us." The price of sugar is up and probably will stay up. As everyone knows, the price of honey is affected by the price of sugar. When the latter is hard to get and high-priced, the demand for honey is stimulated. Early this season the honey market was weak. In the meantime sugar began to go up, with the result that the market on honey began to get better, and there is every indication that there will be a good demand for honey this fall.

Conditions that make sugar scarce and high-priced in the United States also obtain in Europe. The result is that Europe is beginning to look now to America for honey.

The canning season will soon be here, and the housewife can get but a pound or two of sugar at a time. If she can obtain honey, all she wants of it and at a less price, she will use honey, of course, and the beekeepers of the country should not be slow to inform her about the value of honey for canning purposes. Heretofore, she has argued that sugar has been much cheaper than honey, and that was true. Now, apparent-

ly the tables are turning. In most cases honey is not only cheaper, but superior to sugar for canning. Bulk for bulk, honey goes farther than sugar.

For canning purposes a mild-flavored honey is preferable. For example, one would not like to eat peaches with the strong flavor of buckwheat. He would prefer the peaches for the peaches' flavor. It is our opinion that honey from cotton, mountain sage, star thistle, tupelo, gallberry, and clover would all be well adapted for canning. Orange, alfalfa, and basswood would be too pronounced for canning.

Off or strong flavors of honey can be used for cooking, for making cakes and pastries, and for puddings. Formerly sugar was used as it was cheaper than honey, but here again the tables turn.

If beekeepers do not use the splendid opportunities ahead to introduce honey to the housewives, it is their own fault. They should play that kind of slogan to the grocer and all of their local trade.

In a word when sugar is scarce and high-priced, honey is going to benefit, but the beekeeper must not make the mistake of charging too much for his product, or the housewife will choose sugar instead. If we can once show the housewife that honey can be used for canning and baking, we shall have scored a big point for all time to come.



JUST AT this time bees are being moved in carlots from localities in the South, where



How to Ship Bees in Refrigerator Cars.

the main flow is over, to northern localities where the flow is about to begin. Some large producers make a practice of shipping their bees in carlots south in cattle-cars in the fall when the weather is cool or cold, building them up while in the South and catching a crop, then moving them back again to the North in iced cars during hot weather. Shipping bees in the ordinary way in cattle-cars during hot weather is usually attended with considerable loss. The editor in his travels over the country has interviewed a number of producers who ship in refrigerator cars, and the following is the general plan that is used:

First, a refrigerator car must be selected that has ventilating coops or scoops on top at each end. Some ventilation, even in iced cars, is important. The bees are put into the cars in much the same way that they are packed in open cattle-cars, with this difference—that less of ventilation to the individual colony is required. Every hive should have a wire-cloth screen on top; and between each two tiers of hives there should be placed 2 x 4's; and these should be braced in the usual way so that the end shocks as the result of stopping and starting may not break loose the fasteners.

During hot weather much stronger colo-

nies can be shipped in refrigerator cars than in open cattle-cars; but one must be careful not to overdo it. Some men think it is necessary to have a half-depth super on top to provide extra clustering room. Some of them say the hives can be packed solid like so much cordwood. This may be all right for short distances, and where the car is moving along on schedule time. But we do not recommend it even then. It is advisable rather to leave an alleyway thru the middle of the car, so that an attendant can note the condition of the bees. He should see that the car is iced at intervals of not more than two or three days. In any case, should the car get out of ice the result will be disastrous. In the event of an accident or delay, so that ice cannot be procured, the bees must be immediately unloaded, for they can not be confined in a refrigerator car without ice. They should then, after a flight, be reloaded into an ordinary cattle-car, provided a refrigerator car fully iced can not be obtained.

It is important that the attendant get on top of the car himself when it is being iced, and, if necessary, help fill the ice-compartments. Railway employees sometimes do not see the importance of fully icing the car, with the result that the owner of the bees may suffer heavy losses.

Arrangements should be made in advance to have the car iced often—the oftener the better, because the bees will generate a large amount of heat. If they can be kept as cool as they are when in a cellar, and the car be kept moving, except for icing, they will go thru with the loss of hardly a bee.

Where colonies are very strong, or of honey-gathering strength, it is advisable to use two stories. If they are fairly boiling over with bees, it may be necessary to use top and bottom screens in addition. The shipper will have to use his own judgment, always erring on the side of giving too much ventilation or too much room.

It goes without saying, that the attendant does not ride in the car with the bees where ice is used. He can have the "comforts" of the ordinary caboose, and, to see how things are moving, he should open the car only when the train stops. On entering, he should close the door immediately to shut out the warm air and the light.

The important factor in moving bees in iced cars is the exclusion of heat and light. If bees can be brought down to a cellar temperature and kept in total darkness, they will soon become accustomed to the rumble and jolts of the train.

We are not sure but that refrigerator cars without ice would be better than common cars, even in cool or cold weather.

Last, but not least; after loading the bees, don't close the car doors until half an hour after the ice is put in. This will give time for the car to begin to cool from the ice. Better put the ice in before loading the car, if possible.

WE believe that good roads and locations in which there is a maximum of working days during the season comprise one of the secrets of successful commercial beekeeping. We think that no section is what it should be unless there is a maximum number of good working days for the bees and beekeepers during the season, and the accessibility of these locations to the beekeeper's home is highly important. If a beekeeper, when needed, cannot be at his yard on account of poor roads, it is a poor location in spite of the good honey flow. No large system of out-apiaries can be successfully managed unless the means of transportation are ample and easy. Beekeepers are like other people; they do not like to work any harder than necessary, and they will neglect their work unless the yards are accessible and the weather favorable so that the best work can be done.

Feeding the Bees.

As we use a great many 8-frame hives in our bee work we find that it is often necessary to do considerable feeding in the spring. In fact, it occurs quite often with our 10-frame colonies, so that until such time as we feel disposed to adopt the Jumbo hive we think we shall have to do considerable feeding in the spring.

As we are in locations where there are a great many neighboring colonies, we think it inadvisable to do any outdoor feeding. We make our syrup half or more sugar,

POINTERS BY A BIG PRODUCER

How He Extracts and Handles His Thousands of Colonies to Produce Extracted Honey Most Efficiently

By Wesley Foster

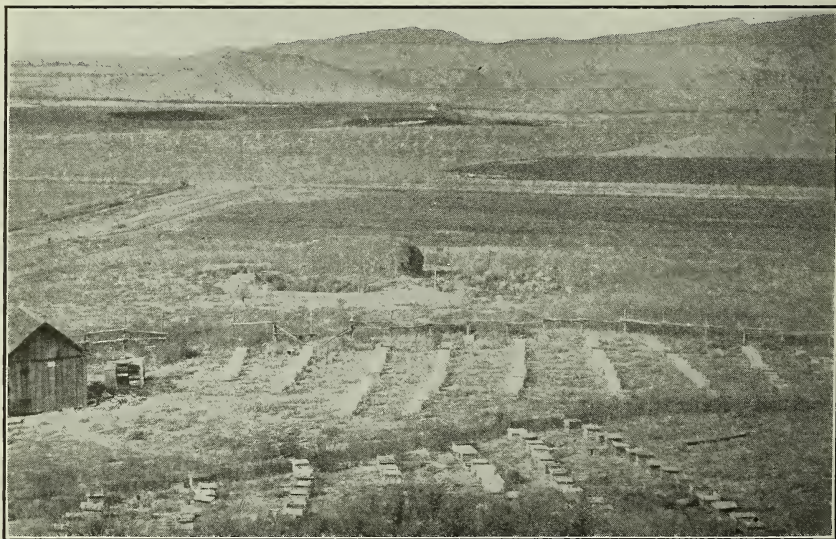
be hauled on our truck to the yards and one or two combs put in each hive. We do this work toward evening, since this method does not induce robbing as it would if we took the combs to the yard and put them in the hives during the middle of the day.

Our Manner of Handling Queenless Colonies.

In running for extracted honey every producer, I think, has the experience of finding, each spring, quite a number of colonies that are queenless. We know this is our experience, and when attending to our queenless colonies we think it does not pay to try to requeen them; so they are simply united with other colonies, and a sheet of paper is placed over the colony with which the queenless colony is to be united, the latter being set on top and a small hole punched thru so the bees can work their way thru in a few days. Our time in the spring is too valuable to spend in trying to introduce queens to these colonies.

We rear only a small part of the queens that we use, as we find it is more profitable to have all the queens ordered from the Southern breeders; and by the way, we always order two or three times as many as we need, thus coming nearer getting what our requirements will be than if we should order just what queens we thought we would need. We have had the experience,

mixing it as hot as practicable, and then pour the syrup into the brood or extracting frames, which standing over night will drain sufficiently so they can



An outyard in one of Colorado's mountain valleys.

running over several years, that queen-breeders are never able to fill in full all of the orders that they are given, especially if a very rigid time limit is placed on the order; so we find it pays better to order heavily and then we can let some of the other beekeepers have the extra queens if we get more than we need. We order quite a number of virgins and requeen with them, the virgin queens being mated in the colonies where they are introduced. This saves the beekeeper a great deal of time and is practically as good as mating the queens in nuclei, for which we have little time.

Cleaning the Hive.

In May and June we spend considerable time cleaning up the frames, the hive bottoms and the hive bodies. We find that a general overhauling of the brood-frames not only does the beekeeper a lot of good in

brood than when we were operating for comb honey exclusively. However, we treat nearly all our foul brood in a hospital yard and by the time the surplus flow begins we aim to have everything treated and ready for the honey flow. We pay little if any attention to maintaining the usual number of colonies in the hospital yard. We unite until we have every colony strong, as it is useless to keep the number of colonies at the expense of strength. In fact, we pay very little attention to the number of colonies in an apiary yard, but aim to have everything good and strong for the honey flow; then when things are going nicely we can make whatever increase is necessary to maintain the ordinary number of colonies. We, however, make practically no increase by division, most of our increase being made by purchase, and what increase we have made among our own colo-



Wesley Foster's headquarters, and one of his auto trucks in the foreground.

keeping things clean, but it also builds up the colony to renewed energy. We shake off the bees in front of the colony as we clean the frames, taking from five to fifteen minutes for each hive, but the time is well spent. Feeding is essential soon after, as the colonies breed up so rapidly after this overhauling that many may be short of honey. The main difficulty in overhauling the colonies is that it takes so long to do it that robbing is often induced and the overhauling has to be stopped.

The Treatment of Foul Brood.

We are located in a district where foul brood is prevalent, and as we are running for extracted honey we find that we have more difficulty in controlling American foul

nies has been made either at the very first of the season or at the end. In our treatment of foul brood we use orthodox methods and do not take any of our time in experimenting. We use the brushing or shaking treatment and leave the bees on foundation for 36 to 48 hours and then put in full drawn combs, filling the colonies with bees and brood, if necessary, just as fast as possible, as we want everything to be in the honey-producing class at the earliest possible date. Our diseased combs are rendered, and, if there is any brood of value in them, we stack these on top of the diseased colonies until most of the brood is hatched, and everything is then taken away and rendered into wax. The hive is disinfected with fire. The honey is boiled and

either sold to bakers or fed to our own bees.

Getting Drawn Combs.

In the production of extracted honey we plan in our operations to have two extracting bodies for each colony of bees. During the past several years we have not had two full sets of drawn combs for each hive to begin with. The most that we have had has been one set of drawn comb and one set of full sheets of foundation.

Our increase in bees has been so rapid that we have had to use extracting combs for brood-combs for our increase, and in this way we have never had full drawn combs for each colony to begin with. However, our honey flows have been favorable enough so that we have lost little if any honey by having the bees draw out their combs before storing the honey.

Early in the season we have quite a spring flow from dandelion and fruit bloom, and we remove combs from the brood-chamber of many colonies and insert full sheets of foundation. In this way we get a great many combs drawn out prior to the alfalfa-sweet-clover honey flow. This not only relieves congestion of honey in the brood-nest, but also gives the queen new combs to rear brood in, which we think is a very desirable feature of operations for this territory. We put in these full sheets of foundation at the time we are equalizing stores and doing general spring work. We have found our spring work with the bees is as valuable for stirring up the colony to renewed energy as the work which we do in cleaning the frames, equalizing honey, and ascertaining the work of our queen.

Extracted-honey Equipment.

We believe that in the production of extracted honey it is important that economy

should be exercised at all times, and especially in the putting up of equipment, wiring frames, putting in foundation, nailing up beehives, etc. We use time cards for all of our men so that we know how many frames a day they wire or nail, and in this way we aim to cut down the expense of labor of operations. We find that it costs us about 75 cents per 100 for nailing frames, about the same for wiring, and about 75 cents per 100 for putting in the foundation and imbedding it with electricity.

We have not taken up any of the methods of wiring frames illustrated in the bee journals. We think that if the work is done properly little, if any, sagging will occur in frames where four horizontal wires are used, and if we want to do a good rapid job of imbedding we prefer the four wires. Possibly, when we have looked into the matter a little further, we may take up the matter of wiring so there will be no sag to the brood-combs. We think this would be a desirable feature in the imbedding of the foundation when we find a method that is rapid enough to adopt.

The Use of Queen-excluders.

We believe that the use of the excluders limits the queen in egg-laying and is a very great inducement to swarming. We prefer to have the queen given the entire run of the hive, even tho it is three or four stories high, rather than to hold her down to one story early in the season. And anyway the bees, along toward the middle and last of the season, restrict the queen in egg-laying, as she generally lets up to a great extent along the middle of July, just at the time we want her to do heavy egg-laying.

In taking out the honey we find little difficulty in replacing the brood back in the



Apiary of W. H. Corthell at Carbondale, Colo., which produced almost a full car of 'comb honey in 1919; 265 colonies spring count.

lower part of the hive, and by the time the last honey comes off we have the brood-nest nicely concentrated in the lower brood-chamber. Strong colonies, of course, we leave two stories high for some little time at the end of the season; but we have found very little, of any, advantage in wintering two-story hives, so that we get everything down to one single eight-or ten-frame hive by the time winter comes on.

The Use of the Automobile in Extracted-honey Production.

As we use quite a number of cars in our beekeeping operations and they are all Fords, we have a garage of our own, with a man in charge who looks after the working of all the cars. He has direct charge of this work, and while he is employed also at other operations this is his major duty. In this way we find we have cut down the expense of our cars at least 25 per cent. We think the Ford touring car or roadster is excellent for the beekeeper to use in going from yard to yard where light loads are hauled, but for heavy loads we have found the Ford ton-truck to be economical and practicable. We doubt whether it is advisable to go into the higher-priced cars as the depreciation is greater, and the beekeepers should operate bees as economically as possible and have most of their investment in bees instead of equipment.

We have clung to the cheaper form of automobiles. Possibly, we may a little later invest in several higher-priced cars; but, for the present, we think the cheaper cars are the most economical in the long run.

The Uncapping Box.

The uncapping box has coarse screen at the bottom, on which the cappings fall so that they may thoroly drain. Honey is drawn off every little while into a can and is emptied into the extractor. By handling the cappings in this way no discolored honey is obtained at all, and we are not bothered with the mixture of honey and half-melted wax which accumulates from the Peterson capping melter. We think it pays us so to arrange the work that the extracting crews have very little to do with handling the wax; so, as they bring in this wax that has been well drained, we have a man at the home plant who takes the cappings every few days and presses them out, and then they are ready to put away for rendering in the fall or winter. Our objection to a capping melter is that it overheats the extracting room, which we try to keep as cool as possible.

With the quality of honey we get in this territory, we find it unnecessary to wait for the sealing of the honey more than half the way down the frames, as we have never had any experience yet with soured honey, and the flavor seems to be all that could be desired for honey of the quality we produce. We have read from time to time of the big records made by various men in extracting honey, but will say that two or three men

in a crew would, in our apiaries as we work them, extract from 25 to 60 cans per day. We have never had over 60 cans extracted in one working day, and we figure that 35 is a good day's work for three men. However, we keep the men at it and have the honey coming in almost every day for some 30 to 60 days, and this continuous bringing in of honey counts in the long run rather than the heavy extractings that are occasionally pulled off.

Our Trailer Extracting-house.

We operated last season with the portable extracting-house and the outfit that we took from yard to yard where we had houses. We find that the portable extracting-houses require too much time to take down and set up, as the men lose half a day in this operation; so this year we have a four-wheel trailer with an extracting-house and extractor, engine, honey-pump, etc., which we haul from yard to yard while extracting. We think it will be a big help to us in the handling of our crop, as with the trailer extracting outfit we shall be able to handle all of the yards that cannot be handled with the outfit that must be moved from house to house. We use the 8-frame friction-drive extractor with honey-pump and engine. We would prefer electric power, but of course this is not available in the out-yards. If we were going to extract at home we would use an electric motor for this purpose. There is one point that we have not yet decided upon and which we are considering, that is, having a tank trailer built for an automobile. If we use this trailer we shall have to have a tank to put the extracted honey in to haul to the large tank at the home plant where it will be run thru our bottling plant, then emptied into the honey containers of whatever size may be filled from the tank in our home plant. The 60-pound cans receive more hard use, in our opinion, in hauling from the beeyard to our home place than in any other way, and if we could avoid this handling of the 60-pound cans by the use of a tank trailer we think it would be advisable. We shall have more information on this matter after we have tried it out for one season.

In our apiary work we use wheelbarrows to wheel the honey from the hives to the extractor, and we place our hives in rows far enough apart so that the auto may be driven right down between the rows, and colonies may be moved out by carrying the hives only a few feet to the truck. We think that all arrangements in the yard should be made so that the least possible manual labor will be necessary to perform the operation. There is enough hard work in bee-yards without the needless carrying back and forth.

We have a number of men working in our yards so that we have adopted the use of an apiary record book, which is ruled so that we can number each hive and have a corresponding number in the book. In this

way we have a record of every needful thing for each colony. We find that it makes the work more interesting for the men and is a valuable test for the manager in checking up the bee-yard work. We think that every yard should have a number and every hive a number. In this way a few years will give one some very interesting data on the progress of the season, and the information collected will undoubtedly be of value in years to come. Of course, beekeepers accumulate this information in their minds, but to have it down in black and white will be a great reinforcement to the memory.

The Extracting-house.

In our operations we have extracting-houses at about one-half of our out-apiaries, and we store the extracting combs in these houses during the winter. These extracting-houses have floors in which bolts are set so that we can set up our extracting outfit in a very short time. In the apiaries in which we do not have houses built we use our portable extracting outfit, which is on a four-wheel truck.

With each extracting outfit we have two

honey-tanks, holding about 10,000 pounds each. These tanks are filled by the honey-pumps, and the honey runs down the inside wall of the tank so that the settling may go on while the honey is running in. If the honey falls right in the center of the tank from the honey-pump, this will throw the honey into the tank in such a way as to keep it in a continual turmoil, and it will not settle much during the day. However, by running the honey down the side of the tank we find that along in the afternoon the tanks may be drained off almost to the bottom, and whatever honey is in the bottom that is not well settled can be drawn off into a can and marked, and then it can be re-settled when it is brought to the home extracting-yard plant. Not over five or six cans in each day's extracting will need further settling or straining.

We have several extra tanks at the home plant where we can handle the honey without the yard men's being delayed in their work.

Boulder, Colo.



IN the olden days of some 30 or 40 years ago we used to think of Arizona as one great desert of mesquite, cat-claw, and cacti, of the cowboy—the land where the bad man with his six-shooter used to terrorize everybody and everything. While the greater part of Arizona is still a desert, and possibly always will be, yet the transformations that have taken place within the last 20 years rival the tales of the Arabian Nights—not stories of bad men and six-shooters, as seen in the movies, but stories of old-time deserts that are now veritable gardens of Eden. Even in 1901 when I visited that State I saw none of the expected bad things. On the other hand, there were in the Salt River Valley immense fields of alfalfa, cattle, milk, and honey galore.

Ever since the desert gave way to these great fields of alfalfa breast-high—the finest I ever saw in the world—bees and beekeepers, lots of them, have been moving there because the alfalfa was then, as it is today,

CHANGE OF BEE PASTURE

Illustrated by Cotton Supplanting Alfalfa in Arizona. Some Beekeeping Conditions in that Arid Country

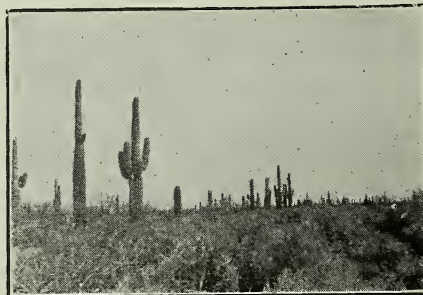
By E. R. Root

Egyptian or long-staple cotton that is used for making automobile tires—a cotton that is bringing \$500 a bale, and is scarce at even that enormous figure. Cotton, on account of the enormous prices paid, gradually supplanted the alfalfa until today nine-tenths of the old alfalfa land is devoted to the growing of cotton. The once enormous cattle industry and, with it, the dairy interests were struck a body blow. Nothing must stand in the way of the automobile

a wonderful honey plant.

Within the last three or four years a wonderful change has taken place. Alfalfa has given way to the

industry when the rancher was paid all the way from 60 cents to \$1.00 a pound for his cotton, and he could make a clean profit of \$300 to \$500 per acre for his land. What cared he so long as he got his price? Then the price of land began to soar, too. It became so fabulously high that many of the ranchers began to sell, and buy the same kind of land at



A forest of giant cacti, which range from 10 to 30 feet high. Some seasons these yield a considerable amount of honey—seldom, however, enough for any surplus.

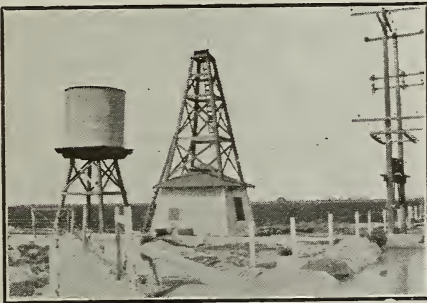
one-third the cost further south in the Santa Cruz district. In the meantime there was a mad rush for the production of cotton.

At first the beekeepers of the Salt River



A near view of a giant cactus which was taken within half a mile of the apiary of Mrs. Lovett.

Valley were expecting their industry to go like the cattle and dairy interests. As a matter of fact, some of them did get hit hard. Alfalfa land around the locations was plowed under, and cotton took its place. In some localities cotton yielded honey, while in others it did not. But while the honey-producing industry seemed to be in danger



A view of one of the wells and hydro-electric centrifugal pumping-outfits on the Goodyear property where long-staple cotton is grown for automobile tires. The amount of water delivered is astonishing.

for a time it has since developed that the cotton may be a blessing in disguise. The alfalfa honey of Arizona is a light amber. The cotton honey of today is white, and of almost a neutral taste or flavor, much like that of sugar syrup. As to quantity, it may equal the production of alfalfa—not because cotton will yield as much honey per acre, but because there will be more acres of cotton than of alfalfa in its best days. Many of the beekeepers around Phoenix and Tempe are just becoming accustomed to the change. Apparently most of them are neither

sorry nor glad, because they do not yet know what is going to happen. Some of them are producing more honey than they ever did in the good old alfalfa days, and others are doing as well as they formerly did.

Long Staple Cotton.

The long-staple variety of cotton has a fiber two or three times as long as ordinary cotton, and hence its adaptability to the making of a fabric for automobile tires. The product is so perfect that the Goodyear Rubber Company has some 12,000 acres of long-staple cotton under cultivation, and 12,000 more that will be opened up soon. And not only that, but, so we are told, they are offer-



The irrigation ditches leading from each well are lined with cement to prevent erosion and clogging. The pumping stations are located over the entire 12,000 acres, about a mile apart.

ing the farmers and ranchers who are growing cotton independently a minimum price of 60 cents a pound, with the further stipulation that they will pay as much more as the market will afford. If I am correct, a dollar a pound was the last figure paid. The company employs Mexicans and Indians to do the work, furnishing them comfortable houses and supplying them with legitimate forms of amusement, such as moving pictures and outdoor sports.

Talk about the grand rush to Oklahoma



A typical Arizona apiary. Practically all bee-yards in Arizona and Imperial Valley, Calif., must be under grass sheds, standing nearly east and west, so that the sun never shines on the hives.

and the Klondike! It was nothing in comparison with the furor of enthusiasm that is now manifest in the Salt River and Santa

Cruz valleys of southern Arizona. The business of raising cotton is spreading over into Tucson; for at the possible price of \$1.00 a pound it is better than a gold mine, because it is a sure thing, or, at least, it looks that way now. In Arizona on the desert there are thousands of acres that will grow cotton. All that is needed is water. Desert lands that were supposed to be worth practically nothing are now being redeemed, and in some cases good cotton land is bringing as high as \$1000 an acre. Indeed, I am told it will earn annually a net profit of \$200 to \$300.

What is occurring in the Salt River Valley is also taking place in the Santa Cruz



Mrs. M. G. Lovett and her foreman at one of her yards of 290 colonies on the Indian reservation. Unlike most apiaries in Arizona, this had no shed over it, because she had been expecting to keep them there only during the winter.

Valley, with Nogales as the center. On both sides of the international boundary, cotton is raised more than around the region of Tucson. Cotton must have a warm or hot climate, and the probability is that it would not thrive very far northward in Arizona, perhaps not more than 50 or 60 miles beyond Phoenix.

While cotton is not as heavy a yielder of honey per acre as alfalfa, and while it does not yield nectar in all localities, yet where the soil is good and cotton thrives we may expect that there will be also bees and beekeepers. The result of this wonderful transformation of alfalfa to cotton, instead of killing the industry of honey-production in Arizona, will, in the end, build it up, and, in those parts of the State where cotton does not grow, there will still be found the alfalfa, sweet clover, and the desert plants. Alfalfa can be grown on lands that are supplied with water that comes from a high elevation. Cotton, however, is so profitable a crop that in some sections of Arizona it pays to pump the water by hydro-electric pumps from wells onto lands too high to be reached by water that is conveyed from point to point by gravity.

We have a remarkable case of this on the Goodyear Rubber Company's 12,000-acre tract that is irrigated with water solely from wells. These wells are placed from one to two miles apart and are about 200

feet deep. The Roosevelt dam, further north, is opening up to irrigation immense areas that can be reached by gravity.

In addition, this remarkable dam is supplying hydro-electric power for pumping water from wells for irrigation, as in the case of the 12,000 acres of cotton land owned by the Goodrich Company. In this connection, it is well to remember that thousands of other acres also can be irrigated by hydro-electric pumps whenever the value of the crop is great enough to warrant the expense.

Beekeeping on the Desert.

So far I have said absolutely nothing about beekeeping on the desert in southern Arizona. One would naturally think that men and animals on lands where there is very little rainfall would die, but this is far from the truth. Thousands of cattle and sheep can be and will be raised on desert land without any cultivation or care whatsoever. In and near Phoenix, on the Indian Reservation, for example, cattle and sheep are grown in immense numbers on the virgin deserts. There are many plants that can be eaten, chief of which is wild Indian wheat. It is a little shrub, or rather, a grass, that looks somewhat like wheat, only it is very small. It seldom grows higher than five or six inches; but the cattle eat this so-called wheat and seem to thrive on it. It is a native product, growing wild. On account of Government restrictions, it is probable that it will be a long time before the white man gets these Indian lands. While the Caucasian would probably be able to get out of these same lands a hundred dollars where the Indian gets one, that will make no difference.

On these reservations bees can very often be kept to advantage. Indeed, those grow-



Mrs. Lovett's apiary out on the Indian Reservation.

ers of cotton who keep bees could, during the winter, move them to the desert. The Indian wheat of which I have been speaking is valuable for both pollen and honey. Then there are a great many other plants, such as wild hollyhocks, that yield some honey. These hollyhocks are very showy, having reddish-purple blossoms. The arrow-weed is another brood-booster. The water mota, or bottom willow, has a small composite yellow flower. This plant is

found along the creek or river beds that are dry most of the time. Buckthorn is another desert plant.

The principal beekeeper, the one who is credited with knowing most about beekeeping conditions in the Salt Lake Valley, is Mrs. M. G. Lovett, of the Lovett Honey Co., Phoenix. Her husband is a newspaper man; and she, formerly a newspaper woman, is the one who runs the bees; and not only that, she works them herself. She has a very competent man as an assistant, and he, together with other help that they can hire on occasions, manages about 1500 colonies. She has an apiary out on the Indian Reservation;



Indian wheat.



and at the time I was at the yard the colonies were working on bottom willow and were two, three and even four stories high. In fact, the colonies were so very strong that I quite agreed with her that it would be an advantage to sell three pounds of bees from each colony, and suggested that she make a practice of disposing of them in March to beekeepers of California, Utah, Colorado, and Idaho, in order to get rid of the excess of bees. With such strong colonies as these it is not surprising that Mrs. Lovett makes such a success of beekeeping.

AFTER several seasons of careful investigation I have learned that my location will support three times as many bees, and at the same time yield $2\frac{1}{2}$ times more surplus, or that 300 colonies will yield $2\frac{1}{2}$ times more honey than 100 colonies would with the same treatment, except that a little more feeding generally has to be done between fruit bloom and white clover.

Fifteen years ago there were 500 colonies of bees, all in about one square mile. Upon investigation I found that the colonies year after year yielded but a trifle less than did mine that were located six to eight miles apart, and eighty to one hundred in a place. The matter was hard for me to understand. I undertook to estimate the number of acres within three miles of all those colonies, and there were, as nearly as I could count, about 500 acres of clover in each location; but now that alsike has become generally sown for hay all over this country, the acreage is nearer 700 per location.

At present, therefore, I believe that 400 colonies in each yard will pay better in dollars than a smaller number, so far as the clovers are concerned. However, for so great a number the fall flow in some seasons might fall a little short for winter supplies; but I do not believe from what I have seen that there would generally be any lack, even with 400 in one yard; as the 500 spoken of above, year in and year out, had sufficient for winter stores from heartsease and the sweet clover. The wonder is that, at a place where only 30 colonies are kept, ten miles from my 300-colony yard, little difference is noticed in the supers. I have watch-

GET MORE HONEY

A Better Knowledge of Nectar Secretion Would Secure Much More Honey in Almost Everybody's Locality

By Frank Coverdale

fords but very scant surplus for 300 colonies; but that when other bloom is out at the same time, it counts for more. This shows very clearly that if one has only 100 acres of sweet clover for 300 colonies, and if the clover blooms for six months, the bees would gather only enough to keep in good condition, and would store no surplus to speak of; but, if 500 acres of white clover and 200 or 300 acres of alsike are added to the pasturage, all the nectar from the white and alsike will be available for the surplus chamber.

Some years ago it was thought by at least one writer that the blossoms yielded nectar only until fertilization took place. This I have found to be not the case, and that clovers as well as apple blossoms continue to secrete until flowers are very near the ripened stage. In fact, I found the nectar most abundant at the time when the bloom was almost ready to drop—that is, that a given blossom actually increases in nectar secretion until nearly ready to fall. The best opportunity for observation along this line was afforded by a field of red clover during a very dry season. This field was allowed to stand until nearly ripe; and I found that, the riper those heads became, the thicker the nectar; and that when the tubes began to ripen the bees actually crushed or crinkled the tubes, which enabled them to reach more deeply to the base of the tubes.

All this has led me to believe that each

ed the bees and looked for nectar, hoping to solve this problem. I have found that 200 acres of sweet clover at a time when little else is in bloom af-

blossom secretes so much nectar, like a tiny spring which, when emptied, will in a certain length of time fill up again. The blossom, I believe, repeatedly fills up until the bloom is nearly ripe. And so it plainly appears that, if not enough bees are kept in a given location, then there is waste on account of a lack of enough bees to gather it, just as surely as there would be waste and loss in a given field of grass if not enough cattle were turned in to use the growing crop.

Thirty years ago I held that 100 colonies were all that I dared keep in one place. This belief was erroneous. Had I come to a right understanding at that early time, then all the past years would have been much more profitable to me. I hear some one ask, "What about the poor seasons?" Well, these come rather too often; but I have found these seasons to be poor anyhow, whether there are few colonies or many. To be sure, it takes more feed to supply 300 colonies than 100. Yet it has been surprising how this larger number of bees get nectar in even a poor season.

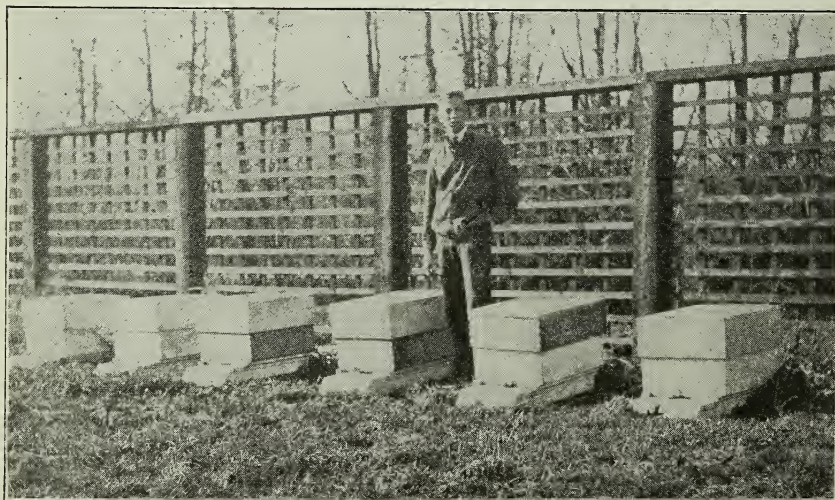
This article is simply meant to help others to study and investigate for themselves, and not to lead any one to increase rashly the number of colonies on a given pasturage. After all is said, it will be safer to keep increasing until you find the right number. I know that, for my location, and all the other locations about here, it will pay best to keep at least 300 colonies, and I do not know how many more; and my location is not a very good one, since, in a series of years, it will yield only about 50 pounds of extracted honey and less than half that much

of comb honey. In my locality the only way that the business can be made into a good money-making proposition is to keep more colonies in one yard and as many yards as one wishes. I think it is a very safe statement to make, that more honey goes to waste in Iowa than is saved, and that some day, thru proper education, waste will be better avoided, as it is in other industries.

There are now in my location on a strip two miles wide and ten miles long over 800 colonies, or enough bees to produce annually 40,000 pounds of extracted honey—not a bad income for any one man who will be satisfied and has a liking for the business. Again, I feel equally certain that 300 colonies on the above territory would yield only 21,000 pounds.

In summing up, I wish it to be understood that, whether 300 or 100 colonies are kept in one yard, those bees will, nine times out of ten, have abundance for winter stores; but where there is but little late bloom to supply winter stores a different figuring will be necessary, and a good fall flow is practically rising the hill to the next season. There are locations in my State where fall bloom is much scarcer than here, and in such localities fall feeding would have to be done. For the beekeeper who wishes to increase his numbers in any one locality where the clovers are plentiful and late fall bloom much less in acreage, it will be this scant fall flow that will, after all, measure the real capacity of any one location where conditions are as they are here, unless one wishes to count on a general feeding each fall for winter stores,

Delmar, Ia.



A boy who got \$125 for his summer's fun with bees. See page 408.



PRODUCING A GOOD CROP

Some Suggestions as to How to Get Good Results in the Apiary

My first swarm came to me in 1885. I was at work in the field when my wife sent out a luncheon by my daughter. She saw something unusual on a big weed and when she arrived told me she had seen a big bunch of flies in crossing a slough and was afraid for some time to pass by. On investigating, I came into possession of my first swarm. In three years they increased to 11 colonies, and noticing in *Gleanings*, Mr. Hutchinson's advice, "If you want to succeed, keep more bees," I accordingly continued to increase the number. My limit seems to be from 60 to 100 colonies. I raise my own queens and sell quite a lot. I have tried all races and their crosses, but for 10 years or more have had Italians only.

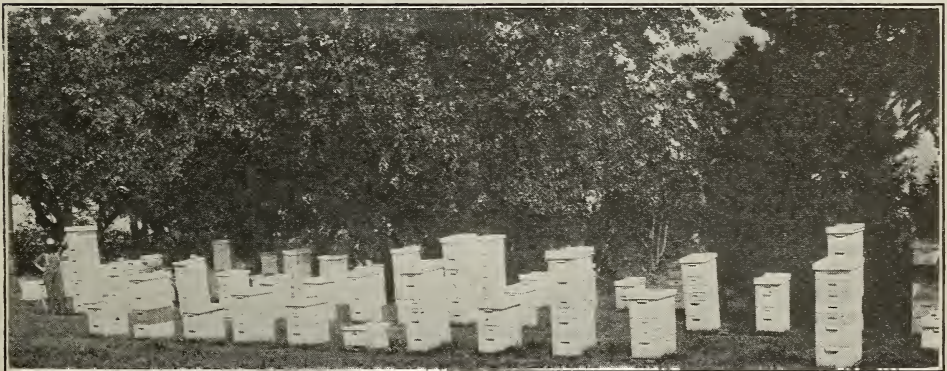
My colonies are set out in a half-diamond. The corner of the diamond comes close up to the north side of my house, the basement of which I use as my storage place for supplies. In this way all the rows come close to the base of supplies, saving many steps. One of my colonies filled fourteen 10-frame supers, nine frames to the super.

I have always run for comb honey until the war, then I changed to extracted, and now having over one thousand combs don't like to change back. The way I get results is to have all colonies ready in September the previous year, with lots of young bees and stores and also young queens. When putting them in the cellar, every hive is weighed and numbered, and a record is kept of the weight and of the weather at the time of putting in and at the time of taking out of the cellar. I also make note of queens that have any superior traits.

This keeps me posted as to what to expect from different colonies the coming year.

I never loosen the cover until some warm day when all are busy flying, and then only examine to see that none are queenless. All having plenty of stores, I never have to move combs for this purpose. Just before fruit bloom I choose a good day and feed in the open, sometimes one day, sometimes three days. This feeding is not to supply stores, but to stimulate brood-rearing. Next I give every one an empty body of combs underneath, leaving the brood above where it will keep warm. Then I let the colonies alone until the dandelions are yielding well. At this time practically every colony will need more room. I give either a full-depth or shallow super, according to how many young bees are on the combs. Before the dandelions are over some are three stories high, and after the flow is over they need more room. This I give by removing the body that I put underneath and placing it on top, my object being to keep brood-rearing going all the time. I try to have all the bees possible in each hive ready for the clover. Oftimes I have to add a super of frames, as the young bees become so numerous that even the three stories don't give them enough clustering space.

As soon as I see the first blossom on white clover, every colony gets a thoro overhauling. The body where I find the queen is attended to first. The two outside combs are not moved. The frame on which is the queen is put in the center. The other spaces are filled with empty combs. Above this body is placed an excluder and above this a super containing the combs having the most sealed brood. Those having honey are placed in the third super on top. At the same time I clip all the queens and then wait for the clover to begin. If the flow starts slowly the bees' inclination is to



One of A. A. Clark's apiaries at LeMars, Ia. Looks like a good crop.

FROM THE FIELD OF EXPERIENCE

swarm. If I decide any are thinking of swarming, I give them a body of combs to relieve the crowded condition. As soon as they begin sealing honey, I give more room at once next to the brood-nest. Then as the flow continues, instead of opening the hives I lift them and thus estimate the amount of honey and whether another super is needed.

Bees should never be smoked when the flow is on, as the young bees that are wax workers will go down and in most cases stop work. This causes swarming, and stops storing considerably. I don't have 5 per cent swarming since using this method, and the photo shows how well I succeed. When running for comb honey I use an entirely different way. I notice that many beekeepers have trouble in getting bees to work in the comb-honey super. This never bothers me, for this reason: If a colony will only crowd the brood-nest full of honey, no matter how good the queen, presto, off goes her head, and another one is given. Here is where raising your own queens pays. Dr. Miller is one man that is also, I think, producing bees that get the most honey for his management.

I find that introducing new stock is detrimental in some cases. You have to try any new blood one season before getting the cross in your stock. If there proves to be an undesirable trait, it may sometimes take as much as five years to breed it out, and this is just an upset for all the work you have done for many years.

As shown in the picture my yield is pretty good. Note some of the hives have a guy wire running over the tops with stakes to hold them from being blown over. My total yield last year was 13,500 pounds of extracted and thirty-three 24-section cases.

A. A. Clark.

LeMars, Ia.



LARGE HIVE with NO ADDED COST

How to Try Out Deep Hive with Present Standard Equipment

A method for those who wish to try a deep hive, a method which, I believe, has not been mentioned, is to use a 10-frame Jumbo body with 9 frames, 1½-inch spacing, in connection with a shallow super which is to be considered as a part of the hive the entire year—for a reserve supply of honey and not to be used for producing extracted honey, unless it may become necessary to remove from these shallow supers honey unfit for winter stores.

The following suggestions serve to show its advantages in many ways: Until further experimental work has been done along the line of large hives, some beekeepers may like to try this plan and still continue the use of standard fixtures. During the

honey flow the shallow super should be on top of the brood-chamber to be filled with honey for winter stores. If in a buckwheat location, the shallow super could remain below the brood-chamber all summer, and then at the beginning of the buckwheat flow be placed on top of the brood-chamber to be filled for winter. Promptly at the end of the honey flow in the fall, the shallow super with its 25 or 30 pounds of honey should be placed below the deep hive. There will be at this time more or less honey in the deep combs—depending on the strain of bees and age of queen, as well as on the quality of combs (absence of sag and drone comb). The bees will move some or all of the honey above before cold weather. In far northern localities it may be advisable to give each colony 10 pounds of thick feed a little later, which will make a total of 50 to 60 pounds of winter stores.

Placing the shallow super of honey below the brood-chamber in the fall, and making it necessary for the bees to move the honey above, may seem an unwise move and exhausting to the bees' energy, but it has compensations very valuable to Northern beekeepers. This honey when placed above is put in the center of the brood-nest in cells rapidly being vacated by the hatching bees. Transference of the honey also causes the queen to continue laying somewhat longer; and, further, another **very important point** not to be overlooked, is that, owing to the shallow body being below the brood-chamber, the bees are offered an opportunity to form their winter cluster at a lower point than is possible in a single story deep hive, affording the bees, as is natural with them, a chance to place a larger percentage of their winter stores in thick combs directly above them. In the spring after protracted spells of low temperature, bees in tall box hives and in trees have been found alive, while to the beekeeper's sorrow many (too many) of his colonies were dead—with "millions of honey" either side of the cluster. Making larger hives either Jumbo or Langstroth style by adding additional combs to the sides is not going to help the bees in the winter, should there be no chance for them to break cluster and reach the stores in the outside combs.

At the proper time in the spring the shallow super can be placed above to catch any early flow and prevent the brood-chamber from being flooded with new honey. In mild climates the shallow super may remain above the brood-chamber the entire year.

In locations where there is a heavy short flow of white honey, comb honey may be produced by moving the hive a few feet at the right time, turning its entrance at an angle of about 45 or 90 degrees away from its former position and placing the shallow body on a bottom on the old stand. Then

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run the old queen into the shallow hive and transfer any supers to it. Also shake in front of it the bees from a few frames taken from the deep hive, giving this old hive at this time a queen-cell. Five or seven days later shake a large number of bees in front of the shallow hive, leaving just enough to care for the brood. At the end of the flow or shortly before place the shallow hive on top of the deep hive; or put it below if in a buckwheat location, to be later put above to catch some buckwheat honey. The chances are that there will be in the deep hive considerable honey which the bees will rush above and use in completing unfinished sections.

In moving colonies or a yard to a new location, how many beekeepers are equal to the job of loading and unloading heavy 11- or 13-frame Jumbo hives? And yet with this arrangement the bees can easily be confined to the brood-chamber if necessary and the shallow super moved as a separate unit. In fact, one man could do it.

Mahwah, N. J. John Vanden Berg.

IS SUPERSEURE GENERAL?

May One Safely Trust Bees to Supersede Failing Queens?

The statement has been made that when bees are left to their own devices every queen is superseded before she dies. Now in my experience I have not found this true. Indifferent health for the last two years has unfortunately compelled me to leave my bees to their own devices as far as queen-rearing is concerned, but the bees have not attended to the matter properly. I find the bees will allow the queen to go on laying until her fertility is practically exhausted when she will lay both drone and worker eggs in worker-cells. At this stage the bees, if they have any sense at all, surely ought to start queen-cells. In a few exceptional cases they do so, but they generally allow the queen to go on until she lays nothing but drone eggs. Only last week I examined my different apiaries for the first time since last year. Some colonies had been destroyed by worms, some had laying workers, and about eight of them had old drone-laying queens. The last time honey was extracted was on the 27th of June, and all my colonies were then in good order and, no doubt, all had queens. My belief is that all worm-eaten colonies, as well as those with laying workers or drone-laying queens, had come to grief thru the very fact that the bees failed to supersede the queen before she completely failed.

In the West Indies the bees rear brood the whole year round. Queens never for a minute stop laying. If bees may be depended on to supersede failing queens, how

is it that if bees in the West Indies are left to their own devices about 20 per cent of the colonies will die a natural death every year, even with the supers full of honey?

About 14 years ago when looking for larvae for grafting purposes I found two nice queen-cells in the hive, one of which had just hatched out. As there was plenty of eggs and brood in all stages in the hive I was somewhat puzzled. I soon found the old queen busily laying. The young virgin was also found running about. As I could find nothing wrong with the old queen I removed the virgin and the cell from the hive and introduced them to a nucleus. To my surprise the bees never started any other supersedure cells; the old queen went on laying as usual and gave a good account of herself next season. This happened in the month of December when there is never any swarming in this place. What were these bees up to when building those cells? Were they trying to supersede or was it something else?

Bees are queer things, but I am not certain that beekeepers are any better. Was it not from Yankeeland that some time ago a beekeeping genius boldly announced that the best way to prevent swarming was to use no drawn combs in the supers but only sheets of foundation. Did not the same beekeeper also give accurate figures showing 30 per cent more honey produced from foundation than from drawn combs? When reading such assertions I feel like putting my two hands to my head and exclaiming like Clemenceau: "Butsch, Butsch, hast thou still got thy head on top of thy shoulders?" My experience in the West Indies in queen-cell building is as follows:

Bees as a rule will not start queen-cells as long as there is a living queen in the hive, whether she be a virgin, a laying queen, or a drone-laying queen. Bees will always start cells if the queen suddenly disappears, provided, of course, there are larvae of suitable age present. During the honey season when the colonies are strong and prosperous their innate instinct of propagation inclines them to cell-building. At such times they will build cells irrespective of the presence of a laying queen. At such times queen-right colonies will readily accept grafted cells even without royal jelly. Failing queens at such times are invariably replaced. Every attempt is made by the bees to rear all the drones possible.

In our Island the honey season starts with the logwood in January and closes in the middle of September. During all this long time, although the brood-nest generally gets no attention from the beekeeper, a colony seldom fails thru the want of a queen. Drone-laying queens during this part of the year are practically unknown. But during the last four months of the year when



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little or no honey comes in, the bees seem to lose completely all instinct for propagation, mercilessly slaughtering the very drones they were raising a few months before. They will not build queen-cells even to replace a failing queen, altho they will rear worker brood quite normally tho in somewhat less quantity.

Our honey crops have been below normal for the last four years. The price fortunately was high. Some of our crop last year sold at over \$1200 a ton.

St. Lucia, West Indies. A. Butsch.

A BOY'S SUCCESS WITH BEES

Last Summer He Cleared up \$125.00 to Pay Him for His Summer's Fun

Towards the end of July in the summer of 1915 when I was eleven years old, a large swarm of bees settled on a branch about six feet from the ground and about the same distance from the corner of our dining porch. When I was about to enter the porch for lunch, my mother covered up my eyes and led me over to the corner where the bees were. I had not heard of the bees nor seen them before, and, of course, I had no idea what the trouble was. When I reached the corner she uncovered my eyes. I looked out, and to my great amazement saw the cluster of bees. It was the first that I had ever seen, and I was so excited that I could hardly eat my luncheon.

After lunch the gardener, who pretended to know something about bees, took a box and cut a hole at one end about an inch square. Then he nailed several sticks across the inside. He told me that bees never sting when they swarm, and made me hold the box under the swarm while he shook the limb. When the bees dropped in I almost unset the box, but he came to my rescue and turned it over on a board, which he had put on the ground under the tree.

The bees were soon busy in their new home, and I, not realizing that they would soon have that box full of comb, took my time about finding them a hive. I finally decided on a double-walled hive and purchased one about two weeks after the arrival of the swarm.

Then I got from the village a man who had once kept bees to come up and transfer them for me. All the neighbors, having heard about the bees, came over that afternoon and sat on the porch, where they were protected by the screens, while the man and I worked with the bees. When he pried up the top of the box, I expected to see a piece of comb about six inches square; instead of that the whole box was full of brood and honey. It was so late when we transferred them that I had to feed them for winter.

I studied a great deal about bees that winter, and early the next spring I examined

them and found that they were still alive and stinging, in spite of the small amount of stores that I had left for them. Towards the end of June they cast a fairly large swarm, which my brother helped me catch. Then they began to cast after-swarms every few days. Not knowing what to do, or that there was anything to do, I kept catching and putting the after-swarms in the same hive until I had quite a colony, even stronger than the prime swarm. Altogether I got 100 sections from them that year, which sold for \$25.

The next winter I gave a short talk on bees before the pupils of a large school in Chicago. The next summer, 1917, I tried clipping my queens; but I made a failure of controlling swarming in this way, for the queens either got lost or else I was not around when they swarmed. I increased to six colonies, but on account of queenlessness and laying workers I had to unite them and had but three then, with no surplus.

In 1918 I had lots of swarming, as I was unable to attend to them until the first week in June. In spite of the swarming I secured 100 pounds of comb honey and increased from three to seven.

Last winter I staid out of school to go to the meeting of the National Association in Chicago. I had Dr. Phillips and Prof. Wilson up for dinner. I met Dr. Miller, and had a fine time during those few days. In the spring I determined to produce extracted honey so as to do away with the swarming nuisance. I bought an extractor and loaded on the frames with foundation for I had no drawn combs. The bees never swarmed or thought of swarming, as far as I know. At the end of July, with the aid of my brother and sister, I extracted 300 pounds of honey in about three hours, which is not so bad for the first time. Then a month later I extracted 100 more pounds, which together with some comb honey amounted to 430 pounds, or about 70 pounds to the colony.

I sold the honey in large flint-glass jars, holding five and a half pounds, for \$2.50 each. I had no trouble in selling them, and one of my customers even went so far as to take six jars. The value of the honey was \$200.00. The cost of supplies and the extractor for the summer was \$75.00, which makes \$125.00 clear gain for my summer's fun.

Howard Fisher.

Hubbard Woods, Ill.



"Beekeeping for Beginners" is the title of a Texas Agricultural Experiment Station bulletin, No. 255, written by Gleanings' regular correspondent, H. B. Parks. This excellent bulletin contains much valuable information in a small space. It is well illustrated and the advice is given in clear, simple fashion. The bulletin would be of interest to any beginner anywhere.

THE weather this year has been unusually favorable during dandelion bloom, warm with almost continuous sunshine, and good colonies have colonized from this source 20 to 30 pounds in addition to that used for brood-rearing.

* * *

Very interesting is that article by S. B. Fracker, page 334, June Gleanings, on Foul Brood Control, but I fear not wholly practical here in New England where we have extensive forests in which, in spite of us, disease may exist. Fortunately, these wild colonies usually all die after a time; and, if the apiaries are kept clean, we have our region clear of American foul brood. I do not at present know of an apiary or a colony in our State where it exists.

* * *

I have been prejudiced against Hoffman frames, which as usually met with in the hands of back-yard beekeepers are a most decided nuisance; but last week I went thru the apiaries of a first-class beekeeper, and was surprised to see how easily a hive could be opened and the frames handled. One thing I have noticed about these frames is that the combs in them are straighter and of more even thickness than in other frames. I have thought this is the result of the accurate spacing.

* * *

Miss Iona Fowls, on page 358, gives good rules for preventing and stopping robbing. Sometime ago I was inspecting a yard of bees where there was some foul brood, and robbing was most undesirable. Time was valuable if I was to check it. I moved back about four feet the hive which the robbers were entering and put in its place an empty hive which happened to be nearby; and I could not help but be amused at the chagrin and disappointment of those robbers at finding the honey all gone and only an empty hive in its place.

* * *

Most timely is the advice on page 330 to plan now to have combs of honey on hand next fall for all fall feeding required. Not only is it timely, but it is also good. I am slowly coming to the conclusion that a pound of clover honey in the hive is of more value than a pound of sugar fed to a colony, altho the pound of sugar will make nearly a pound and a quarter of heavy syrup. As I live and learn, I find it a little difficult to be consistent. How the years take the conceit out of us!

* * *

I was sorry to read on page 331 the rather unfavorable report on those pretty aluminum combs. While it has seemed doubtful whether they would prove of much value in



our cold New England climate, I had hoped they might prove a blessing to beekeepers in the warmer sections of our country. The ingenuity display-

ed in getting them up and the enterprise in manufacturing them are certainly worthy of commendation. Doubtless the good Lord knew the best material with which to construct combs when he taught the bee to secrete wax, and when man attempts to improve on this methods he is apt to have a rather hard problem to solve.

* * *

Our thanks are due A. I. Root for the full account in June Gleanings, he gives us in his quotations from various sources concerning the new annual sweet clover. I had supposed it was simply a sport and of little value, but evidently it looms up as a most valuable acquisition as a farm crop, to say nothing of its value as a new source of honey. If, as stated, it comes into bloom in from 2½ to 3½ months from sowing, it would give our bees something to work on during the latter part of August and September when they are usually idle.

* * *

In the editorial on page 329, the reason given for believing that the southeast section of our country is most promising for extensive beekeeping is that a large number of the farmers keep bees in the old slipshod ways. Now, we who make it our business to keep bees often want to know how to select a good location. I believe there is no surer way of telling a good range for bees than by noting the number of old-style beekeepers in any given neighborhood. If it pays to keep bees at all in the old way, it is pretty sure to pay largely to keep them in a thoroly scientific way.

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I have immensely enjoyed reading Mrs. Puerden's account of her trip to California and back. When she calls it a country of "infinite variety and beauty" she tells the truth; but I have a feeling that, if the other side is left out, many will get a wrong impression and think that it is only a place of "infinite variety and beauty."

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During the height of dandelion bloom this year, combs of honey could be left out in the yard for hours without the slightest attempt at robbing.

[Say, Mr. Crane, a recent visitor to the scene of your busy bee activities tells us that you feel that feeding and feeds for winter ought to be emphasized, preached, and printed more than they are—fully as much as protection and packing. Won't you give our readers your full views about this sometime before fall?—Editor.]

OBEDIENCE is a pleasure—sometimes—when it coincides with one's inclinations. A number of the readers of *Gleanings* have asked me to tell more about Luther Burbank and his achievements, something which I am glad to attempt; but please remember that a two-page article about a man who has given a lifetime of hard work, 10 to 14 hours a day, to improving plant life, can touch on just a few points which happen especially to interest the garden lover and Luther Burbank admirer who writes this.

IT is humiliating to have to correct a mistake in the May article, where I said Mr. Burbank showed us a wonderful hybrid walnut tree, four years old. Let me quote from a letter written by Mr. Burbank to Mr. A. I. Root: "In regard to the walnut tree: This 'Paradox,' which your daughter saw was just nine years old. It is fifteen inches in diameter all the way up to twelve feet, where it branches. This particular strain of the 'Paradox' bears nuts rarely; but the growth of the new wood is about the thickness of a man's hand all around the tree annually."

In a letter written to me the same day he said, "Your article was in all respects correct except for this slight misstatement."

It is very kind for Mr. Burbank to call it a "slight misstatement" when I cut his figure in two and then dropped half a year, especially as I happen to know that he has suffered very much in the past from exaggerated statements. To be perfectly fair I may as well confess that Mr. Burbank did not know that I intended to write an article about my visit, nor, as far as I know, was he aware that I am in the habit of writing.

The way the mistake happened was this: We saw the hybrid walnut tree, which Mr. Burbank told us was nine years old, and a sequoia (giant redwood) four years old, and evidently I unintentionally reversed the figures. I should have submitted the article to Mr. Burbank before turning it over to the printers, but California is a very long way from Ohio, and, as usual, before the article was finished the editor was growing impatient for my copy.

THESE swift-growing walnut trees are among the most fascinating creations of Mr. Burbank. Years ago he began crossing English walnuts with the native California black walnut, raising seedlings, selecting the fastest growing, grafting, and repeating the process until after many years he had seedlings which approached his ideal. He selected half a dozen of these, set them out in the hard earth in the street in front of his home, where they would receive no

MORE ABOUT LUTHER BURBANK

Stancy Puerden

cultivation and no irrigation in times of drouth, and left them to themselves. In 14 years, in 1905, these trees had become nearly 80 feet in height, their

branch-spread was 75 feet, their trunks were fully two feet in diameter at the height of a man's head, and not much less than that at the point of the first branch, some 12 to 15 feet above the ground.

Just across the street was another row of trees, English walnuts. In the 14 years the new walnut trees had grown six times as much as the older trees had grown in 30 years. All of Santa Rosa was interested in the wonderful, swift-growing walnuts.

Practical lumbermen will tell you that fast-growing trees are usually of coarse, soft grain, not suitable for fine finishing. Let me quote again from Mr. Burbank's letter in regard to this: "The timber of this walnut is harder than any other walnut by actual test by the piano men of Chicago and New York. In fact, it is so hard that it cannot be planed but has to be sawed and then smoothed on a sand belt. This is very remarkable for such a rapid-growing tree." In fineness of grain and beauty the wood is much like mahogany.

Those trees in the street had to be sacrificed as Mr. Burbank said, "They were growing so rapidly that there would soon be no street left."

Let me make one more quotation from Mr. Burbank's letter to me: "I hope to be able to send you a fine 'Royal' and 'Paradox' tree next fall." I don't suppose I ever read a single sentence which filled my heart with such delight as that one. I am sure I shall want to sit up nights to guard them and watch them grow.

THERE is so much more of interest that could be told of the walnut trees and of the wonderful chestnuts which bear at 18 months; but I must pass on to the fruit trees, no less wonderful and interesting and perhaps still more valuable to the world. You who have Mr. Burbank's 1920 catalogs have doubtless read this quotation: "Before Nov. 15 there had been grown and were shipped out of the State of California this season 1,192,256 crates of plums and cherries alone of varieties which were created on my own grounds, besides one large shipping firm which could not make a variety report. Some 7,000,000 bushels of Burbank potatoes were also grown here this season, and unnumbered carloads of rhubarb, prunes, and other horticultural products can be added for good measure."

One entire town in California has been built up very largely upon one or two varieties of his plums. Several varieties are being extensively cultivated in the island of

Borneo, and the late Cecil Rhodes ordered all Mr. Burbank's then new varieties of fruits for his extensive fruit ranch at Cape Town. Several years afterward a consignment of plums which grew from those cuttings was shipped 18,000 miles by steamer and rail from Cape Town to San Francisco, arriving in prime condition. His fruits have also been introduced into various parts of Europe with great success.

In the breeding of fruit trees there were so many things to work for; for instance, size, flavor, productiveness, early bearing and early ripening, juiciness, sweetness, good-keeping qualities for shipping purposes, hardiness, long life for the trees—I don't suppose I can name them all. Like all great men, Mr. Burbank always has the vision of what he is trying to attain, a sort of mental pattern of what he wants. In addition to all the desirable qualities I have named he has been working to produce pitless prunes and plums. After 12 years of unremitting, painstaking, expensive work with as many as 5000 little trees in training at one time, the first pitless prune appeared. He is now working with many varieties of both prunes and plums which have no stone, but in most of them remains a tiny kernel which adds a rich, almond flavor to the fruit.

I believe none of these have yet been put upon the market, but it is said to be only a question of time before Mr. Burbank will breed the pit out of all his varieties of plums, prunes, and cherries. May he enjoy many years of health for his work.

Maybe some of you, like myself, have wondered what is the difference between a plum and a prune. Mr. Burbank gives this definition, "Any plum which will dry in the sun without spoiling is a prune." In other words a very sweet plum is a prune, because it is the sugar content which enables them to preserve themselves like raisins.

DEAR me, there is so very much more that could be said about the many varieties of plums and prunes which Mr. Burbank has introduced, but I already foresee my troubles when I begin to try to fit this article to my space. I always did detest cutting and fitting. However, I am going to mention a plum with the flavor of a Bartlett pear. A great fruit man, on being blindfolded and given a taste of this plum said, "It is the finest Bartlett pear I ever tasted."

One thing which delights me about Mr. Burbank is his way of doing things which scientific men have long declared to be impossible. He might be said to cut scientific red tape just as such men as Herbert Hoover cut official red tape. As an illustration there is his plumcot, produced by the union of plums and apricots, not a new and distinct variety of an already existing fruit, but a new fruit given to the world.

Other creations of new species are the primus-berry, a union of the raspberry and

blackberry, and the phenomenal berry, created from the California dewberry and the Cuthbert raspberry.

MAYBE someone is wondering why I have not yet mentioned flowers. I am rather surprised at myself, to tell the truth, but you see that necessary correction started me on trees and then fruits seemed to follow logically.

Fourteen years ago this summer, on my first visit to California, I was charmed by bowls of wonderful daisies which appeared on the tables of a certain hotel in Santa Barbara. I had always loved the common field daisies in spite of a farm-bred husband who told me I would not love them if I had ever been a small boy and had to fight them as persistent weeds. These daisies in Santa Barbara were enormous, of the purest white with a gold center, full petaled and symmetrical. Combined with the orange gold of the graceful California poppy they formed a beautiful contrast. We were told that the daisy was the Shasta and a Burbank creation. I came home, ordered seed, raised plants, and for years our garden was beautified by the great daisies. Now I find that it took Mr. Burbank eight years to perfect the Shasta daisy. It is a triumph indeed, for it will flourish in all soils and all climates but will not self-sow, has flowers three to six inches in diameter on long, strong stems, and will keep fresh in water from ten days to two weeks. Since this time Mr. Burbank has added a double daisy to this which makes it a rival of the chrysanthemum, as the daisy will bloom all summer. Another, newer still, is a fringed daisy.

Just to mention a few more of his flower triumphs, Mr. Burbank has added variety to the golden California poppy by producing it in crimson and other colors; he has taught the gladiolus to bloom around the entire stem instead of the old way, on one side; he has driven the disagreeable odor from a dahlia and given it the fragrance of a magnolia blossom; he has increased the size of a poppy until it measures ten inches in diameter; has bred an amaryllis to nearly a foot across. He has produced a calla ten to twelve inches in breadth on a six-foot stem, and then has bred others down to tiny things less than two inches in diameter.

WILL you pardon me if I am personal and just a bit boastful for a minute?

I am quite successful with delphiniums (hardy larkspurs), or perhaps it is merely that our heavy clay soil is especially adapted to them. At any rate, in June, I always have a large bed of them, great, strong plants, covered with stately spikes of bloom. They are plants which I have raised myself, and honestly, you never saw finer larkspurs. When they are in full bloom the bed is like a mass of blue flame, exquisite shades of blue. They have only

(Continued on Page 440)

SUMMER days are certainly golden ones for the sideline beekeeper. For the professional, too, perhaps you will add. A different kind of gold, dear reader, a different kind of gold. The reason summer seems to me so especially a wonder season for the sideliners is that it brings him so much downright joy, most of it the leisurely high joy of the spirit, that has nothing at all to do with profits and only an incidental connection with crops. To the professional honey-producer, summer brings the "busy season," that most business ventures are heir to, be they agricultural or otherwise. There is a constant sense of rush and bustle and getting things done, necessary, vital things upon the doing of which his very income depends. It means steady, old-fashioned hard work and lots of it.

But to the sideliner, the backlotter who has perhaps only half a dozen to a score of hives, the springtime hangs out the latch-string to the mysteries of the hive, and summer opens wide the door. These are the days when, over all the land, there are men a little tired with the burdens of office or factory, who are growing eager-eyed and refreshed among the quiet ancient marvels of the apiary; when dream-hearted women, weary of egg beater and dustcloth and darning needle, lean rapturously over some fragrant dusky hive and lose themselves in wonder and content.

The delights of thus keeping bees as a sideline are innumerable. Added to the thrill and splendor of the swarm almost certain to issue in either May or June, are countless other delights scarcely less exciting. A queen never ceases to send a thrill thru your true bee-lover. I remember one day when Mr. Allen and I were working together; he had just set off the last super and was inserting a tool under the excluder, when I squealed, "There's the queen!"

"Well, what in thunder is she doing there?" he demanded, as we watched her an instant on top of the excluder that was supposed to be keeping her below. I didn't know, but having raised brood twice, thought likely I'd raised the queen, too, the second time. Deciding to clip her at that opportune moment, I tried to pick her up. No indeed, she allowed no such liberties. A swift hop or two, and she took to wing. We waited breathlessly for her return. Not seeing her, we went on down into the brood-chamber, looking for—whatever we were looking for, swarming symptoms, I believe. "Ah, here's the runaway back!" Mr. Allen exclaimed presently. Again I reached for her, there on the comb. This time she took almost instant flight. We were much distressed, fearing she might not return the

Beekeeping as a Side Line

Grace Allen

second time. And behold, just then, across another comb another queen came walking, quiet, sedate, dignified, one wing clipped, "Oh, that other

is no laying queen!" we shouted in the glee of sudden understanding. "It's a gay, flighty young thing that must have emerged in the upper story from that first brood raised."

"From some cell you failed to cut last week?" came a suggestion from across the hive. "From some cell I failed to cut and am glad of it!" I admitted happily. In such slender, unlooked-for happenings your true backlotter finds almost unlimited joy, even tho they result occasionally from his own apiarian sins.

Greater skill is always his watchword, however, and little by little he progresses in his methods, probably trying in turn every system described in the journals. Like all the rest of them, we have clipped queens and we have not; we have let them cast the first swarm; we have cut cells every week to prevent them; we have used the Alexander method of swarm control and the Fowls' adaptation of it; we have given them the run of a story and a half and two stories and seen them swarm anyhow. This particular summer, feeling the necessity of holding the force together at almost any cost of mere labor, we kept cells cut out again, examining the brood-chamber comb by comb during May, then compromising in June on the method we undignify with the title, the *tipsy* method, tipping hives up, you know, to look for queen-cells on the bottom. It won't locate them every single time, but it comes pretty close to it—close enough, I'm thinking. Moreover, if the brood-chamber consists of two bodies, then tipping the upper one alone will suffice time after time. If there are no cups along the lower edges of those upper brood combs, I don't believe there's one chance in one hundred that they are starting cells below—provided, of course, the queen is occupying the upper story. Sometimes she isn't; it is given over entirely to honey. Even then they will sometimes choose the lower edges of those upper combs to build queen-cells on. But even if I find rows of cups there, if there are no eggs in them, I don't bother to tip up the lower chamber. And I recommend this tipsy system to any sideliners who may more or less have discarded their old leisurely ways in order to keep as many bees as they can manage in the time at their disposal. If you are practicing cell-cutting at all, it saves lots of time.

The reason we were so very keen to prevent swarming this year, that we were willing to look thru or under each brood-chamber once a week, is because such a heavy

clover bloom broke over our fields, following our bad weather and starvation period in April, that we felt we could not afford to lose even one swarm. And as we belong to that smaller class of sideliners with most of their bees away from home, saving swarms looked difficult.

It has worked out a bit unexpectedly, however. The sideline out-yard has so many lovely features that the habit of coming out here has grown upon me till now I am spending more time here than at home! There's the getting to the yard—coming out in the morning, before the freshness is gone, by roads that lead under cool green trees, along fields white with clover, where stone fences and gate posts are hung with clustering roses, where the locust and honeysuckle scents of May give way to the sweetness of rose and magnolia in June, and where one lifts up one's eyes to the everlasting hills and thanks God for them. Not one hive have I opened today, yet here it is three o'clock, and I have been out at the country yard ever since nine this morning. Let a swarm come out now, if it will! At this moment I am sitting on a hive seat in the honey house, with my little typewriter on a chair. Thru the window streams the June sunshine and the hum of the bees. There's a row of low hills circling the distant south and west—and orchards, some of them with alsike for a cover crop, in bloom now for the second time. And birds—red birds like a flame, blue birds like a scrap of sky, mocking birds like a fount of song, brown thrush, darting wrens, bobwhites across the fields. Perhaps it is a little too easy just to lie back against all this beauty, like a swimmer on the water, and let its sustaining power hold you, without effort of your own. And isn't that one of the sideline privileges, even tho claimed in an outyard? Need we always rush around and be forever doing things? I wish the world might learn again the flavor of leisure. Out here there are only the quiet-filling hours with their gifts of silence and birdsong and humming of bees. One forgets committee meetings and organizations and that one is to preside over something day after tomorrow (the joy of being away from a telephone!). One takes one's rest in a hammock swung across the honey house, and slips off to sleep, things are crooning so. And waking, one tiptoes to the window and surprises a lizard sporting around the nearest hive. I had forgotten there were such things as lizards. I really didn't know we had them in Tennessee. I always think of them as in Florida, after the visitors have gone back north, basking in the sun on the sand, catching flies. They do catch flies, don't they? Do they catch bees too? I did not see this one do anything so inconsiderate today, tho it did glide around and under the row of hives where this year's fine nuclei are ranged.

More and more I like these shallow supers. Perhaps if our crops averaged hundreds of pounds, that would make a difference. The

larger unit, both in comb and super, might be more convenient. But for here, we both like the shallows. By the time they are full, they are quite heavy enough, too, thank you. As part of the brood-chamber they work admirably, tho it pays to get the little combs drawn straight and solid to the bottom-bar. Then, with good full-depth combs, the queen seems not to balk at all at going from one to the other. After the flow is well on, however, they often crowd her down out of the shallow, putting in honey as fast as the brood emerges. When I find she has abandoned the upper story, I usually raise it above the excluder, treating it like any other super, in deference to the prevalent idea that the bees don't store as enthusiastically when there is considerable honey immediately over the brood. But if the queen continues to occupy both chambers, she is allowed the run of them thruout the flow.

What an important thing the tiering up of the supers becomes! Nearly every beekeeper has had the experience of putting on new ones rapidly—wisely, he has supposed—keeping well ahead of storage needs, when all his plans would be spoiled by a turn of the weather. I think it was in 1918 that the end of May saw supers piled rather high here; then June was all rain, and many beekeepers were left with unsealed honey spread over several supers, foundation gnawed down, and general disappointment. More conservative ones, who never give new supers till the bees begin to seal those on the hive, came out better. Yet had June fulfilled the promises of May, they would have secured smaller crops than their more optimistic brothers. Right now it is interesting to notice the same difference between different yards. May June live up to May!

At last we have five "Long Idea" hives started. They came too late to try out last year, and this year will scarcely be a test.

You know the painless, tidy, gradual method of transferring that is so popular now? You fit a nice new hive over the old one, close the lower entrance, and, because bees object most seriously to a brood-chamber below the entrance, they will promptly come up. It does sound so good, we wanted to try it. We have dodged transferring up to now. Well, among Mr. Allen's colonies (we have a merry and elastic division of hives into yours and mine and ours) is now a keg of bees he paid two dollars for this spring, to transfer them by this polite and painless and alluring system. He now has his third super on, but the queen, unless indeed she has swarmed out, still rears her young in the retound recesses of the keg. "Why should I worry?" Mr. Allen laughs down thru his honey to the queen below. "You've paid for yourselves ten times over. And when I get good and ready I'll transfer you anyhow by the old-fashioned ax-and-knife method."



FROM NORTH, EAST, WEST AND SOUTH



In Southern California.—The California Honey Producers' Co-operative Exchange has secured the services of C. E. Millspaugh as general manager, who is one of the most experienced honey men in the West. He has for 15 or 20 years been dealing in honey and other California products, and brings to the Exchange a ripe experience along these lines. For several years past he has been with The Los Angeles Honey Co., (Hamilton and Menderson), and previous to that time he was in business for himself.

Beekeepers hereabouts have been exceptionally busy for months and especially those who practice migratory beekeeping. All of those who move from the oranges to the sages have been working overtime getting their apiaries moved. Help is hard to get and hard to keep, but one finds many men interested in the business, who always come and who want to work and get what experience they can, hoping eventually to get into the game for themselves. Most of those, who ship in from other States, have shipped one or two carloads to their northern locations, but some have already moved out all of their bees. One large shipper, whom I saw loading, had a refrigerator car already iced. It was a warm day, and the bees were making considerable noise. He said, "Oh, you little fellows, you will get cooled off when the car starts and this ice begins to get in its work." This man shipped in refrigerator cars last year, and says that he hardly lost a bee. To get the orange honey and make increase ready to ship north is the great problem. Your correspondent believes that it can be done profitably, and that it will continue to grow as a business. The high prices of supplies does not interfere with some of these shippers having the very best of everything. It certainly looks fine to see a carload of 500 ten-frame Langstroth hives, all exactly alike and fitted in like peas in a pod.

On the night of May 1, unknown parties entered the apiary of F. A. Alexander near Perris, Riverside County, and took away with them 20 colonies of bees together with a capping-melter, a gasoline stove, supers, foundation, etc. Many beekeepers report losses of from one to seven or eight colonies. It may be a well-organized band of robbers or only someone wanting to get a start in the business. Stealing is getting to be a menace to the keeping of out-apiaries. At a recent meeting of the Riverside County Beekeepers' Club, a committee was appointed to devise ways and means whereby a plan can be worked out to apprehend these vandals. A system of marking all hives, frames, and equipment was suggested. It was also suggested that an ordinance be framed making it unlawful for anyone to move bees without first having a permit from the county inspector. Such

permit should give the name of the owner, the number of colonies to be moved, and the location to be moved to. A uniform law for the State embodying these points might help in catching the offenders.

Extracting the honey at the apiary and bringing it to the home place the same day is being practised by several beekeepers this year. I run it into a small tank and then into five-gallon cans. These are brought home in the evening and the honey emptied into tanks, where it remains for ten days or two weeks to clarify properly. At the end of this time, it is put into cans ready for the warehouse or shipment. One beekeeper has a one-ton tank on his truck. His pump from the power extractor puts the honey into the tank. When he arrives home a pump forces it from this tank to one in the yard. This avoids all handling. Work can be made easy in a way, if we only know how to go about it.

The decoy-hive fellows have been very busy this year, and one can see an old box or hive tucked away in a tree almost anywhere. Considering the amount of swarming reported, there have not been as many catches in this way as one would suppose. A large per cent of swarms caught have been found hanging to trees and bushes. Are swarms more inclined to enter old hives or boxes some years than others? One year I put out about 30 decoys and caught 25 swarms in a short time. This year, with about the same number of decoys, only five or six swarms have been caught. It is certainly a good idea to have all hives no longer considered in condition to be used in the apiary, placed around in trees and out-of-the-way places. A colony caught is cheaper than a colony bought.

There certainly has been a "come-back" to the black sage this year in southern California and especially in Riverside County. The writer does not hesitate in saying that the best flow experienced in the past 25 years has been on for a few weeks. Colonies strong in bees and of the right age for field work have averaged four pounds per day over a period of 15 days or from one extracting to another. The honey is water white and of a very heavy body. The white sage is just beginning to yield well in most sections of southern California. The purple sage is also yielding well. The wild buckwheat is looking fine now and is secreting a little nectar in the earlier localities. It should produce abundantly for some weeks yet.

Corona, Calif. L. L. Andrews.

In Iowa.—From the correspondence which is now being received concerning foul-brood inspection, it is very evident that among the beekeepers there is general ignorance of the law relative to this matter. Every beekeeper interested in this



FROM NORTH, EAST, WEST AND SOUTH



work should acquaint himself with the provisions of the law. If inspection is considered necessary an application should be made for an "Inspection Request Blank," which will be furnished by the State Apiarist. A copy of the law is contained in the State Apiarist's report, which can be secured upon request.

At its last meeting, the State Beekeepers' Association named a State Fair committee of which Bert A. Brown of S. W. 1st and Indianola Ave., Des Moines, is chairman. This committee will provide for the interests of the beekeepers of the State at the fair this year. Those who are interested in the rules for exhibitors and the premium list should write to Mr. Brown. It is expected that more beekeepers than ever before will avail themselves of the opportunity to compete for these prizes. Plans should be made now to enter prize honey.

The premium list of the Mid-West Horticultural Exposition this year will contain, for the first time, prizes for honey. This show has grown rapidly and now attracts horticultural exhibitors from many States, and it is expected that the same will be true of honey-exhibitors. The prizes are exceedingly liberal and will certainly attract entries from many sections of this and other States. The committee in charge has been named as follows: F. B. Paddock, Ames; Geo. D. Nelson, Osage; J. H. Paarmann, Davenport; E. M. Brown, Iowa City; J. H. Allison, Council Bluffs. The Exposition will be held at Council Bluffs during November.

The Fair-price committee, named at the last meeting of the State Association has started its work. Letters have been written to the larger producers, and the compiled opinion on June 1 was that the honey price would open for the 1920 crop but little if any higher than the prevailing price for the 1919 crop. This committee will continue to solicit the opinion of representative beekeepers in all sections of the State and will try to become familiar with the general honey situation of the United States. Reports will be issued by the secretary in the Beekeepers' Bulletin. This effort is aimed to reduce the needless amount of underselling, which is far too common.

In spite of the seemingly late season, white clover came into bloom in this locality about June 5. The bees immediately began to work on this plant heavily, and by June 10 the effect of this bloom was being felt in the hives. Two or three days later yellow sweet clover came into bloom, and the bees began working on it immediately. Prospects seem to indicate a very good honey flow from the clovers. White clover is well distributed, as is the sweet clover. There will also be a fairly good flow from basswood in this locality. F. B. Paddock.

Ames, Ia.

In North Carolina.—Generally speaking the North Carolina beekeepers are experiencing one of the best seasons in a number of years, but at the same time the yield is not nearly so abundant as indications gave promise of early in the season. Two distinct "spells" of cold cloudy weather, that kept the bees off the pasturage much of each day, had the effect of considerably curtailing what would otherwise have been a really bumper crop of honey. The quality of the honey this season is ranging much higher than the average, the gums, gallberry, and the like giving especially large yields of beautiful clear honey, in eastern Carolina sections where there are especially dependable sources of honey. Reports as to the western sourwood flow have not come in yet, but it is believed that this also will be a good crop this year. In fact, Federal and



Section of Kelly Beeyard, Lower Cape Fear Apiaries, Wilmington, N. C., illustrating heavy honey yield. These bees were transferred from "gums" to standard hives only two weeks before this picture was taken, the colonies then having only three or four frames of brood and foundation. The top hive body supers were all full of new honey and the work of filling the lower supers far advanced, with some completed sections already removed from numbers of the hives.

State Apiculturist C. L. Sams, who has traveled lately into every section of the State and mingled with the beekeepers, expressed the opinion that this has been a good season for beekeepers all thru the State.

Some indication of the rapidity with which bees gathered honey in the early stages of the gum, holly, and gallberry flow in southeastern Carolina is given in a "snapshot" of a section of the Kelly beeyard of the Lower Cape Fear apiaries, taken just two weeks after the bees were transferred from gums to standard hives when they were given just three or four frames of best brood from the gums and the rest of the frames containing only foundation.



FROM NORTH, EAST, WEST AND SOUTH



In these hives shown herewith the top hive-body supers are chock-full of honey, and the bees are far advanced in filling the lower supers—many of them section supers from which some completed sections had already been taken when the picture was made. The bees, as told in the last issue of *Gleanings*, were driven during the week of April 16, and this picture was made just two weeks later.

In eastern Carolina beekeepers will begin extracting late in June, and the work will go right on thru July and, in some localities, probably well into August. W. J. Martin.

Wilmington, N. C.

* * *

In Ontario.—Since sending in copy for June, we have had a very dry period in most parts of Ontario, and the result is that alsike has been rushed on at least 10 days sooner than it should open, taking the lateness of the spring into consideration. Altho opening quite fast the plants are short and stunted; and, unless copious rains come soon, alsike prospects are anything but bright, whether for honey or seed purposes. Eastern Ontario, especially that part of the country adjacent to Ottawa, has had soaking rains, and I suppose the clover there will be correspondingly better as compared with the drouthy areas farther west. As reports come in respecting winter and spring conditions of the bees in Ontario, we learn with regret that the loss of colonies has been very great. East from Toronto where the crop was better last year, wintering appears to have been above the average, especially where cellar wintering is largely practiced, and this applies to most of the eastern part of Ontario. But most of the counties in western Ontario have had abnormally heavy losses, which are not confined to small inexperienced beekeepers. In many cases, a dearth of pollen appears to have been the cause of heavy loss; as, with no natural pollen in the hives in April and with no chance of the bees getting fresh pollen owing to inclement weather, of course brood-rearing stopped and the death rate exceeded the birth rate, with the inevitable result that the bees dwindled to mere nuclei or perished outright. In one large chain of apiaries that I examined, the foregoing causes brought about the heavy loss, as the bees wintered perfectly in every way, and then dwindled out in April and early May. In other sections of the country, granulated natural stores caused disaster in hundreds of colonies; and, taking all reports received and averaging the same, I do not believe that 30 per cent loss will cover the amount of colonies dead in counties west of Toronto.

Sugar keeps soaring in price, altho not at present nearly so high as in the United

States. What honey will do in sympathy with these high sugar prices remains to be seen, but I do not think it will go to the high figures named by some parties; in fact, I do not think it would be the best thing for the industry for the honey to go so high as to be beyond the reach of the masses of the people. Some contracting has been already done by a few beekeepers, but the most of them, no doubt, expect much higher prices than those prevailing at present and will take no chances on selling now.

Present prospects are for a light acreage of buckwheat in our immediate localities; but is is to be hoped that enough will be grown to help out in the sugar bill, for all signs point to scarce and dear sugar this fall.

Regarding that colony having the two aluminum combs, I would say that the queen continued to avoid using them for brood-rearing until all four waxen combs on opposite side of the hive were literally crammed with brood in all stages. On May 19 I shifted the aluminum comb that was next to the fourth waxen comb and placed it outside of the hive, putting a waxen comb next to the one full of brood. There was not an egg in the aluminum comb at that date, altho considerable fresh pollen and some honey had been placed in it. The changing of combs was made at 4 p. m. on May 19; and the next day at the same hour, just 24 hours later, I examined the hive and found the newly placed waxen comb with hundreds of eggs in it. Altho crowded for, at least, 10 days, with the aluminum comb next to the brood-nest not an egg would the queen place in the cells, but inside of 24 hours the waxen comb was used freely. And yet last summer this same queen used the two aluminum combs freely for brood-rearing during hot weather. But I do not consider this a fair test; and, if possible, I want to get enough combs of the metal variety this summer to have a colony on them for wintering, and also to see how they compare with other colonies on waxen combs in regard to brood-rearing in April and May when we have such cool weather. But, candidly, I feel at present like advising anyone to go slow in buying large quantities of these combs for northern use. It is better to wait a short time until the combs are more fully tested. Needless to say, I have no axe to grind in the matter. If the wish was father to the thought, certainly I would be reporting in glowing terms how successful this new invention was turning out.

Markham, Ont.

J. L. Byer.

* * *

In Texas.—In spite of adverse weather and late spring there is thus far a good honey crop in Texas. In the chaparral district extracting began by the first of May, and averages of 70 to 125



FROM NORTH, EAST, WEST AND SOUTH



pounds surplus were common. This honey is principally huajilla (wahea); it is almost water white and of the finest quality. Overlapping the huajilla flow came the horsemint flow, and now white brush and mesquite promise a prolongation of honey production. Reports from the State indicate that the crop will be normal or above in all sections save the post oak district. This is located in East Central Texas and divides the black prairie lands from the pine and swamp eastward. This section has a light-colored sandy soil and a flora dominated by oaks. It is a poor bee-country excepting during years of heavy rainfall. Individual reports of no honey flow come from other districts, but these are overbalanced by reports of heavy flows in a near locality. Commercial beekeepers estimate a winter loss of between three and eight per cent. The loss in box gums was very severe. The sellers of combless packages are still delivering bees. They have shipped more packages than in any previous year.

The first report has come in relative to bees dying from the effect of arsenicals used on the cotton fields. A great many of such complaints are expected, as very large acreages of cotton will be dusted this year. In order that this subject may be studied, any beekeeper who has losses of this kind is requested to send samples of dead bees, dead brood, and honey from the dead colonies to the office of the State Entomologist, College Station. This is a problem about which little is known and both the entomologists, representing the cotton interests and beekeepers, are very desirous that beekeepers comply with this request.

An all-day picnic and exhibit of the products of the Baby Beef, Pig, and other farm clubs was held at Dilley in Frio County. As this is about the center of the Southwest honey country, many beekeepers were present. Representatives of the Texas Honey Producers' Association and several honey-buying firms were present. This brought about personal contact between buyers and sellers, and very satisfactory results relative to marketing honey were attained.

Shipping live bees requires an exact knowledge of the work and the most careful packing. Almost all complaints from buyers and nearly all of the hostility of the express companies come from poor packing. This is well illustrated by two shipments of bees received here this spring. One hive, that had been on the road 36 hours, arrived with most of the live bees on the outside. Inside was a mass of broken comb and dead bees. The other was on the road eight days. When opened, everything was in good shape, and the cleaning-up did not bring out over a half pint of dead bees. A seller of combless packages has shipped 25,000 pounds of bees, with the loss of 100 pounds; another

lost 600 pounds out of a 1,000-pound shipment. If you ship bees, know how and use only the best cages and hives.

So much is being said about the honey flows from oaks in Texas that I feel I must make this statement, altho I wish to delay a full report until later. Some of the material collected by bees in the spring from oak is a secretion from scale insects, but a larger proportion of it is a plant secretion coming from mechanical injury to the buds, new leaves, and green shoots. Probably some of this comes from punctures made by insects of the plant bug variety. The big honey flow from live oak, which occurs in the fall of the year, comes from a gall. This is a distinct plant growth. The galls are about three-fourths of an inch in diameter and are attached to the twigs of the tree; the nectar is found in drops on the surface. This gall is caused by the sting of a small wasplike insect. The young of the insect lives and matures with this plant growth, but the young insect does not secrete or excrete the nectar; this is the product of the malformed portion of the plant.

The work of foul-brood inspection and eradication is making good headway. In addition to the county inspectors, the chief inspector and four full-time deputies are now at work. Successful clean-up campaigns have been conducted in localities where several years of inspection have shown no, or little, decrease in the disease. Because of the justly rigid quarantine laws of other States, calls from shippers of bees have been so numerous that extra help was necessary. Those interested in bees are co-operating in every way. Several of the large dealers in bee fixtures, who also handle live bees and honey, have of their own accord separated the places of business so that no bees, honey, or old fixtures are handled near the new fixtures or cans. We are hoping that no one gets patriotic and attempts to distribute second-hand bee-fixtures here.

College Station, Tex. H. B. Parks.

* * *

In Oregon.— If it were not for the sudden epidemic and visitation of foul brood that has stricken this and surrounding section, prospects could not be better. Colonies not infected are more than piling the honey in, but thousands of colonies are in bad shape. The trouble is spreading like a prairie fire in a big wind. The live beekeeper that learns how and is willing to fight pests will eventually win out. Some may believe that only weak colonies are the first to show the disease. Don't you believe it—none by strength alone are immune to it; neither is it brought about by visiting. I am satisfied the bees carry it into the hives from diseased material removed from the affected colonies.

Portland, Ore.

E. J. Ladd.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Dr. Miller Answers Questions on Splints.

last year and adopted your idea of splints and like them, but I had a lot of trouble from the bees' gnawing out the splints. I waxed them as per direction, but they even removed the foundation an inch each side of the splints in their fury. Do you know why? Last year was a poor one for us, June being very dry and the rest of the summer exceptionally wet. During one or two light flows the bees accepted the splints better. One can do lots of stunts during a flow that won't work at other times. I used a bottom starter, and the bees did build right down to it, and the queen did lay way up to the top-bars, which I never saw before in my 30 years of peering into the mysteries of bee-housekeeping.

"I extracted from the outside frames (I use 12-frame hives), and had no trouble from breaking combs, and I can make an extractor shake the building when I bear on a little, which makes me believe that Mr. Root is wrong (April Gleanings) when he says that combs with splints will break in a power extractor. I have a Root 4 reversible, which I can run as fast as they need to be run. In fact, I tried to remove pieces that the bees gnawed off and was surprised to find how tough the wax had made the splints—a fact Mr. Root did not take into account. I made my own splints on a little buzz saw I rigged up and hitched to an emery wheel, using whitewood (Liriodendron) for the splints; but I wish the bees would leave the splints alone after I fix them."

To this letter Dr. Miller replies: "I'm afraid I cannot tell you anything you do not already know. Bees are well called 'busy bees,' and when they have nothing useful to do they will be busy at some mischief, and if a splint is not imbedded entirely to their minds they consider it an impertinence and try to dig it out. Let a flood of honey come, and they have no time to potter with such things, but build right over the intruder. A little close observation will show that the same thing is true of wired frames. The only thing I know to do is to abstain from giving foundation to be built out when honey is not coming in. That may be awkward in such a lean year as last year was with you, but I don't know any help for it. When, however, you succeed in having a frame entirely filled out with perfect worker-cells clear from top to bottom-bar, as you cannot have it filled out in any other way, you feel well paid for all the trouble you have had. I don't know just how far Mr. Root may be right in thinking that splinted combs will not do for power ex-

F. R. Davis of New Jersey wrote Dr. Miller as follows:

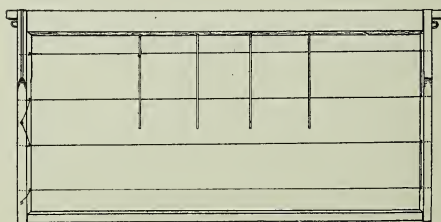
"I read your interesting book, 'Fifty Years Among the Bees'

tractors, but I feel pretty sure that where the extractor is turned by hand, as it is in most cases, that splints will be found all right. Moreover, if Mr. Root should actually try splinted combs in a power extractor, as I very much wish he would, I think he would find the breakage much less than his theorizing would lead him to expect. He may say, 'Men that run power extractors don't have splinted combs;' to which I can only reply in the words of Shakespeare, 'Tis true, 'tis pity; pity 'tis 'tis true.'"

Splints Used on Large Scale.

On page 228, April Gleanings, in an article on wiring frames, you have a fall-out with Dr. Miller in regard to his splints, and end with the statement that you know of no large beekeeper who is using splints. Now while I may not qualify as a very large beekeeper as beekeepers run in the West, still I am operating on a strictly commercial scale and basis, and at the present time have several thousand very fine combs drawn on splints. I have no sag whatever in them, and am of the opinion that they are as fine a set of combs as anyone can show.

I wire my frames horizontally with four wires, stretching them very tight, using No. 28 galvanized wire in place of No. 30 tinned, as I find this is stronger and will not rust.



Showing Mr. Fairchild's use of splints, preventing all sagging in his thousands of combs.

I imbed wires with electricity, all four wires at once. I take the current from an ordinary lamp socket, running it thru an electric flatiron for resistance. I then take a foundation splint which has been previously boiled for a half hour in wax, break it in two, and put four such half-length splints about 2½ inches apart at the top of the frame over the wires, pressing them into the foundation. I have absolutely no trouble whatever with sagging of the foundation, and I find this is quicker than running the extra brace wire, which nearly all of the systems you illustrate require. Instead of stringing the wire thru the holes in the end-bars, I drive 2-penny fine lath nails thru the end-bar from the outside and turn them over into a hook by means of a pair of pliers.

HEADS OF GRAIN DIFFERENT FIELDS

This method is quite common in California, and permits stringing the wires tighter than does the other way. I have tried almost all methods of wiring, including the single-diamond and double-diamond perpendicular wiring and several of the methods you have illustrated, but find the splints are much more satisfactory and permit the use of the electrical imbedder which any method of crossing wires interferes with.

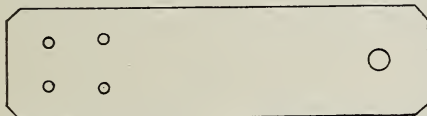
Redlands, Calif.

R. E. Fairchild.



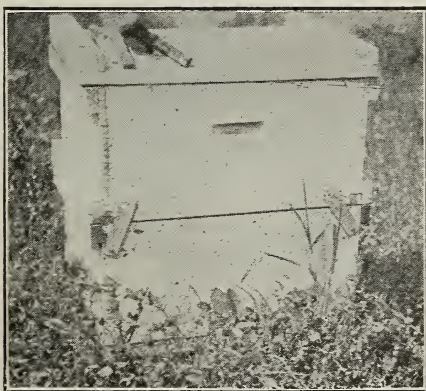
Fastening Two-Story Hives for Moving.

Frank R. Buchanan, Glendale, Calif., has developed a very simple and unique scheme for fastening hive-bodies together for moving. It consists of a piece of galvanized strap iron of approximately one inch in width, 3 inches long, and 1/16 thick. The



Fastener made of galvanized scrap iron about 1/16 inch thick.

corners are rounded, and in one end a hole is bored large enough to admit a round-headed No. 8 1½-inch screw. The other end has four holes bored large enough for a stout one-inch wire nail. Two of these pieces are held by the screw about 1½ inches from the top of the lower hive on each side at the ends of the hive. When one hive-body is put on top of another the

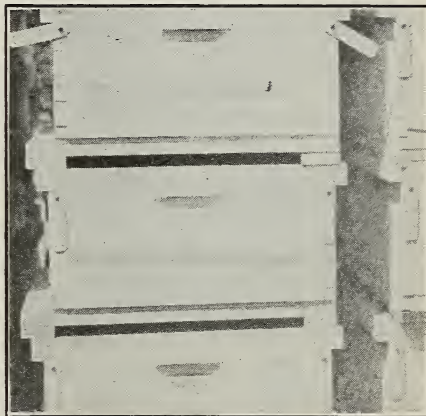


Two fasteners are used on each side as here shown. Easily put on and easily removed.

piece of strap iron is revolved at an angle and nailed and fastened to the upper hive-body by one nail driven clear home. If the roads are not too bad, two such pieces of

strap iron on the diagonally opposite sides would hold the hive-bodies together. But Mr. Buchanan thinks it safer to have four. When I asked him why he had four holes in one end instead of one he said that sometimes the grain of the wood would not permit of a nail being driven in at any point. By driving four holes he has a choice of four positions.

When I first saw this scheme of fastening I did not think very much of it, because I thought the double-pointed crate-staples would be cheaper, as quick to apply, and just as good. In reply to this, Mr. Buchanan argued that the staples are mean things to pull out when once driven in; and when one is in a hurry he is liable to leave those



Showing different positions of the fasteners to indicate as many different conditions of the hive.

hooks sticking out that catch the flesh or clothing, with painful results. When the staples are entirely removed they are liable to be dropped on the ground to be stepped on, piercing thru the shoes into the feet. With his fastener the work is done more quickly and surely. Then he showed how much easier it is to loosen the nailed end of the strap iron and draw the nail with a common hammer.

I found that many beekeepers in the vicinity of Los Angeles had adopted the device. When I asked Mr. Buchanan if he was going to patent it he said, "Fudge! no. If it is of any value, let the people use it." These fasteners can be made at a machine shop or a blacksmith shop equipped with a small drill press. They will last a lifetime, and are always ready.

Mr. Buchanan has discovered another use for these fasteners. They can be revolved at various angles, each angle representing some one condition of the hive. By using two of them on each side all sorts of combinations can be made. With a glance down

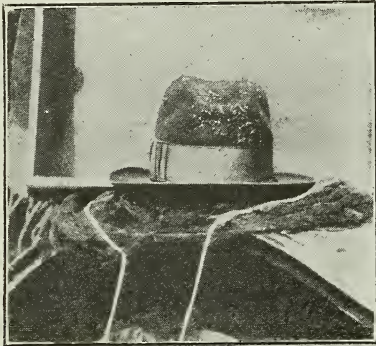
HEADS OF GRAIN FROM DIFFERENT FIELDS

the rows of his hives one can very quickly determine the condition of each hive at the previous visit as shown by the angle or angles of the fasteners. E. R. Root.

Greasy Waste as Smoker Fuel.

About 10 or 12 years ago, several articles appeared in *Gleanings* stating that greasy waste was such good fuel for the bee-smoker. At that time I tried it out, with very unsatisfactory results; the bees getting the best of me each time, seeming to become very angry at the smell and the hot smoke.

Several days ago, I had occasion to increase artificially a few colonies of bees,



Greasy waste bee stings.

and, having no other material handy, used some greasy waste which I found there. The result is shown in the accompanying photograph, which is "the end" of a very exciting movie reel entitled, "The Beginning of a Perfect Day."

I counted over 200 bee-stings, which were left in my hat. These were from bees of one hive only, into which the greasy smoke was blown. I changed fuel after that, and had no trouble in handling the other bees.

Baton Rouge, La.

E. C. Davis.

The Use of Steam in Extracting.

I have found the use of steam heat in the extracting-house a great success. I use it for melting the cappings and for heating the honey and keeping it just right so the honey-pump can handle it. The steam is led into the capping-melter, the uncapping-tank, also under the extractor and under the pan that heats the honey for straining, and under the tank that delivers the honey to the pump. All of these five places need no special attention. I simply have to keep up the steam outside under the boiler, and that is easy.

Brush, Colo.

Daniel Danielsen.

How to Get Rid of Pollen-clogged Combs.

In a back issue of *Gleanings* I read the suggestion of getting rid of pollen by putting pollen-clogged combs above the excluder with the queen. This is all right; but the bees will clog other combs below again, so the same thing will be repeated. I take a knife or hive-tool, or something sharp, and cut and demolish the surface of the comb where the pollen is, and then give it to the bees. They will clean it all, carry it out of the hive, and repair the combs ready for the queen to lay in them.

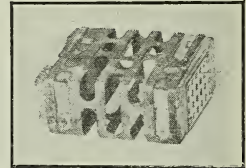
Brush, Colo.

Daniel Danielsen.

[Unless it is certain the colonies have pollen far in excess of their needs it should not be destroyed, but saved for brood-rearing, when it will prove to be exceedingly valuable. In some localities, however, there is always sufficient pollen without any special foresight on the part of the beekeeper. —Editor.]

Queen Cages for Swarm Prevention.

My cage for confining the queen on the top-bar during the swarming season was given on page 715, 1917 *Gleanings*. For years I have often caged in this way for 10 days as a swarm-preventive measure. I find, however, that it is better to cage the queen nearer the brood and, therefore, now use the cage in the accompanying illustration, destroying the queen-cells and pinning the cage containing the queen to the comb by means of a nail, at the end of nine or ten days releasing her and destroying any cells that may be found.



Thompson's queen cage used in prevention of swarming.

There is no danger of the bees' balling the queen while she remains in the cage. The perforations allow the bees to enter and freely mingle with the queen, but prevent her from leaving the cage.

Having the queen confined in the perforated cage has much the same effect as tho the queen were above in the super, but when the queen is confined in a wire cage in a normal colony, another queen will be reared and mated while the old queen is caged.

There is some prejudice against confining a queen for fear it may spoil her as a layer. It will do her no harm, however, if she is not removed from the hive.

Medina, O.,

J. E. Thompson.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Buttonbush in Some Places is Valuable Honey Plant.

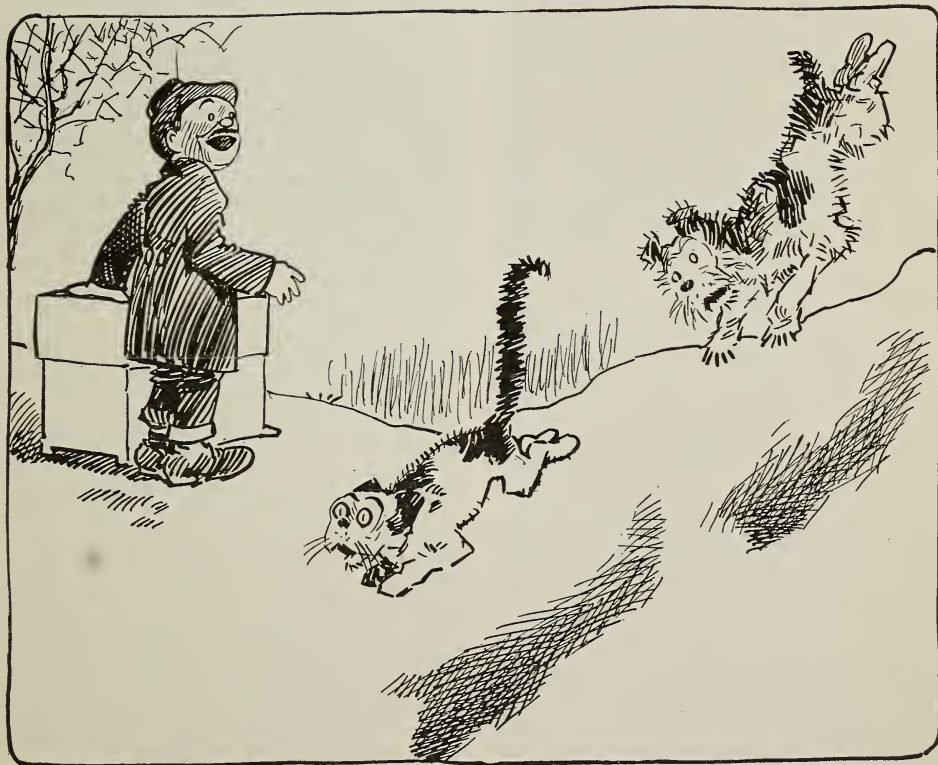
The buttonbush (*Cephalanthus occidentalis*) is also called buttonball, buttontree, honeyballs, globe flower, pond dogwood, and buttonwood shrub. In North America there is only one species of buttonbush or *Cephalanthus*, a brief description of which is given in the A B C and X Y Z of Bee Culture. There are, however, five other species found in Asia and tropical America, some of which are small trees. Our species is very widely distributed, extending from New Brunswick to California, and southward to Florida, Texas, and Arizona. It belongs to the Madder family, or *Rubiaceae*. The English name, "buttonball," is also used for the plane tree (*Platanus occidentalis*), which has very small green flowers in dense globular heads. Hence it is better not to use this name for the buttonbush.

In North America the buttonbush grows along the banks of rivers and in dense masses in swamps. The corolla-tube is 9 mm. ($\frac{1}{2}$ inch) long while the tongue of the honeybee is only 6 mm. long; but as the

tubes are trumpet-shaped, flaring at the mouth, the honeybee is probably able to obtain all or nearly all of the nectar. The nectar is abundant; and, besides the honeybee, the plant also attracts bumblebees, various solitary bees, and a large number of butterflies which are easily able to drain the nectar with their long slender tongues.

In the vicinity of large swamps the buttonbush is often a valuable honey plant. This is especially true in the bottom lands of the Mississippi River, where this shrub covers large areas. In Gleanings for Oct. 15, 1914, G. W. Haines describes a large swamp, ten miles long, at Mayfield, Mass., in which there is a profusion of buttonbush bloom. It comes into bloom in August with buckwheat, and at about 11 o'clock the bees usually leave the flowers of buckwheat and start for the great swamp, where they work on the buttonbush all day. The honey is mixed with that of buckwheat, to which it gives a fine flavor. It has been described as mild and light-colored.

Waldoboro, Maine. John H. Lovell.



BACKLOT BUZZER.

Benny Sourweed says, "When these bee experts get to quarrelin' over the best way to hive 'em, smoke 'em, an' winter 'em, it jes' makes him think of old Tige and Bill Mellvir's cat."

QUESTION. —
When I ran
my bees for
comb honey
and practiced
"shook swarming"
I placed the two
outside combs of
the colony that was
to be shaken, con-
taining honey and

pollen, in a new brood body and by using dummies contracted the brood-chamber and forced the honey above. I found that if there was any unsealed brood in these outside combs the bees would rear queens and supersede, or the queen would disappear. In running for extracted honey and placing the queen below with one frame of brood and the rest of brood above an excluder, I find that a large per cent of queens placed below disappear. I keep my queens clipped so I know they do not swarm. May it not be on account of the unsealed brood that the queens become missing, and would it not be better to place, below, a frame of sealed brood too old to rear queens from? What has been the experience of others?

Indiana.

D. F. Rankin.

Answer.—Our experience has been that queen-cells are not usually started on the unsealed brood in the instances which you mention, unless such unsealed brood is in a chamber apart from the queen. In the extracted-honey plan that you mention we wonder whether you left plenty of super room immediately above the brood-chamber. When we have done this there have not generally been queen-cells started below. Queen-cells are, however, more apt to be started in the brood-chamber if sealed brood is left there, for as soon as the sealed brood hatches there will be a good many young nurse bees, which are more apt to cause queen-cells to be started than are the older bees. In a colony that has already made preparations for swarming we would greatly prefer to keep the hatching bees far above the brood-chamber.

Questions.—(1) Are the queens that are raised by the bees in a good swarming season just as good as queens that can be bought, provided a man has good Italian bees to commence with? I bought six queens last July from a good breeder and last June raised four queens myself by a queenless colony. Now the colonies that have the queens I raised myself are much stronger than the six for which I bought queens. (2) Lately I have been raising a few more queens; but a day before the cells were hatched, I opened six of them and found that there wasn't a bit of jelly left at the bottom of the cell. Will these queens be all right or is it better to destroy them and try to raise others? I have only 20 colonies of bees and would like to have only the very best and strongest queens in every one of them.

Texas.

C. G. Wuthrich.

Answers.—(1) We believe so. Others, however, contend that the progeny of queens raised under the swarming impulse are more likely to swarm than are those raised under the supersedure impulse. If one has good Italian bees to begin with, there is no reason why he cannot raise fine queens himself, and in time he may learn to raise queens even better than any he will be apt to buy, for queens, after they go thru the mails,

GLEANED BY ASKING

Iona Fowls

are not in quite as good condition as before sending. Their daughter queens, however, would be very good and would, perhaps, be a better strain than your

own. (2) Just before the hatching of the queen the cells are often found with little or no royal jelly. We think you will find those queens are all O. K. We certainly would not destroy the cells.

Questions.—(1) In my new hives there are no division-boards. Is it necessary to buy a division-board? I have a swarm of about four pounds that I hived in a ten-frame hive with full foundation in the frames. They cover about four frames. Should they be confined to these four frames or allowed the run of the whole hive? (2) These hives have a space at the side almost large enough for an eleventh frame. Is a large space like that proper? (3) Should the bee-escape in the inner cover be kept there when no sections are on—just the brood-chamber and cover? (4) Should swarms have full foundation or will they remain with inch starters only?

Virginia.

S. C. Wolcott.

Answers.—(1) In case of full colonies it is not necessary to have a division-board, unless you wish to contract the brood-chamber when putting them into winter quarters, and even in this case you could easily make a division-board of thin boards yourself. It would be well to have a few such division-boards on hand, no matter how you prepare for winter, because there are times when one has a weak colony and does not wish to give them the entire hive. In case of weak colonies it is best to give them only as many combs as they can conveniently occupy, and then place a division-board between the outside frame and the vacant space. Then as fast as the nucleus increases in size more frames may be added. (2) When the frames are new there is quite a space at the side, but after they have been in use for some time the bees propolize them to such an extent that this space at the side is taken up, and there is just enough room to remove the frames easily. While the frames are new it would be well to space them evenly, so that the bees will draw out the combs equally in each frame. (3) The bee-escape should not be left in the inner cover, but the opening for the escape should be covered by a piece of section or other thin strip of wood. (4) Swarms should not be given inch starters, but should have full sheets of foundation, or, better still, drawn combs. In case you have a few drawn combs we would suggest replacing two or three of the frames of foundation with drawn combs, since the bees will be much more contented with a little drawn comb toward the center of their hive.

Questions.—(1) On the 18th of May I cut a bee-tree, a big tulip tree, six feet in diameter. I left the hive at the tree for over a week when I found the bees had built queen-cells and seemed

fewer in numbers. Evidently the queen was mashed or went off with a swarm. Not long ago I brought the hive home and now (June 7) there are neither young bees nor eggs in the hive, altho the combs are white with honey and the bees have drawn out part of the foundation. Shouldn't the queen be laying by this time if there is one in the hive? It takes 16 days for a queen to hatch out; how long should it be before she starts laying? (2) I just gave this colony a frame with eggs and young larvæ; was that all right? (3) After a prime swarm issues what is the shortest number of days before another swarm may come out?

Virginia. Carrington Calloway.

Answers.—(1) From your description you evidently wrote us 20 days after your first queen was lost. It would probably be 10 to 12 days before the virgin would hatch. Then it would likely be from five to eight days longer before she would be laying. (2) Yes, that would give them a chance to start queen-cells in case they had no queen. (3) The time that will elapse between the prime swarm and the after-swarm depends a great deal on weather conditions. In case of unfavorable weather such that the queen is confined to the hive for some time, the first after-swarm might issue as soon as three days after the prime swarm, but this, of course, would be unusual. Generally the first after-swarm does not issue for as much as eight days after the prime swarm.

Questions.—(1) My two colonies being short of stores this spring, I fed them for a week, when a swarm issued. On looking over the hive I found it chock-full of honey. Did I do right in feeding so much? I hived the swarm and in less than 10 days they sent out another swarm, and I caught the queen and clipped her wings and they are doing nicely. (2) We have another hive which sent out a nice swarm and we hived them without a sting. In about 10 days it sent out another swarm, and they were the crossdest bees I have ever seen in my life. What do you think could have been the reason? My bees are all Italians.

Virginia. H. E. Anderson.

Answers.—(1) It was all right to feed the bees since they were in actual need of stores, but apparently you gave them more than they really needed, and they, therefore, filled the brood-chamber with honey so that the queen had not enough room to lay, which condition probably caused the swarming. When the first swarm issues, all the queen-cells but the best should be torn down and the old hive moved to a new location. This prevents after-swarms. It is unfortunate that you clipped the wings of the queen in your after-swarm. The queens in after-swarms are unmated, and, since queens mate while on the wing, it would be impossible for such a queen to mate if her wings are clipped. She should be killed and a laying queen or capped queen-cell given. (2) As a general thing, swarming bees are good-natured, but occasionally they may be cross. If they swarm with little or no honey in their honey sacs they are very cross.

Questions.—(1) Two of my hives containing clipped queens swarmed out about a week ago. Being away at the time they all went back in the old hives. Several days later one colony swarmed

out and this time clustered. Could there have been a virgin queen with them or will they sometimes cluster without a queen. I found the old queen crawling about in front of the hive. (2) After hiving the new swarm, I placed the old queen in the new hive and set it on the old hive-stand, giving them a frame of brood and honey from the parent colony. This frame contained two capped queen-cells which I discovered afterwards. Should I cut these out? (3) The other hive has not yet swarmed for the second time. I found the old queen outside the hive several days. She seemed to be hurt, as she moved about very slowly, dragging her hind legs, and the next morning I found her dead. Upon examining the colony I found a dozen capped queen-cells. Do you advise cutting them all out but two, leaving one for the old hive and one to lead out a swarm? (4) Should I cut out all queen-cells from the hive that swarmed? Will this prevent after-swarming?

Pennsylvania.

Earl B. Hunt.

Answers.—(1) Bees often swarm out and cluster even when their queen is not with them, but if she is not in the cluster they will very shortly return to their hive. (2) When hiving the swarm they should not be given capped queen-cells. You see if capped queen-cells are given them and they also have their queen, they will be very likely to send out another swarm. Any time, however, when you think there may be a virgin queen present, the swarm should be given a comb containing some eggs and young larvæ. The swarm will stay more contented. (3) Quite likely the other swarm with the injured queen left their hive, the queen with them, and she being unable to fly became in some way injured before she returned to the hive. In such a case, all of the queen-cells but one should be torn down. (4) For preventing after-swarms, about the easiest plan is to tear down all but the best queen-cell and move the old hive to a new location, hiving the colony in the new hive, left on the old stand.

Questions. (1) How would the following treatment of swarms work when no increase is desired? Hive the swarm on combs of full sheets of foundation on the old stand; shake or brush all bees remaining in the parent colony in front of the hive containing the swarm; place the beeless brood, after killing all queen-cells, over an excluder, on a hive being run for extracted honey; kill queen-cells again in a week if necessary. (2) Would it be better to divide the brood from the parent colony among several colonies instead of placing all of it over one hive?

Washington, D. C.

R. E. Hile.

Answers.—(1) It would be possible to treat your swarms in the way that you suggest in case no increase is desired. However, there would be a possibility that the bees would immediately start other queen-cells and swarm again. Simply removing the brood oftentimes will not discourage the swarming fever. It would be much better to remove also the young bees together with the brood; for these young bees are the very ones that are primed with royal jelly ready for queen-cells. (2) Yes, if all the colonies are already strong. It would be better to help up two than to get one so very strong that they themselves might plan swarming.

BEES are doing fine — at least all that are strong enough. At the present time mine have from 75 to 100 lbs. of honey and I am certain they will average 100 lbs. We have had considerable rain in June and prospects are further brightened."—W. T. Rabb, Travis County, Texas, June 10.

"Weather conditions thruout the State of North Carolina have been awful this spring for queen and bee rearing."—H. B. Murray, Randolph County, N. C.

"Those who wish to try the giant spider plant (cleome) and do not know where to obtain the same, may get it from the W. Atlee Burpee Co., Philadelphia."—Bernard E. Johnson, Campbell County, Va.

"I will not be able to ship half the bees I prepared for because of the weather, and have lost (in mating) over 60 per cent of my queens, and more swarmed out leaving five frames, brood and honey."—L. L. Ferebee, Jasper County, S. C.

"Starting three years ago with one stand of bees I now have 15. I averaged 96 pounds to the stand last fall and sold it for 50 cents a pound. I think that did pretty well for the kind of year we had."—Arthur I. Greene, Greene County, Pa.

"We have just finished the most wonderful flow from dandelion we have ever had. I shall have several hundred pounds surplus in addition to having every brood-chamber actually honey-bound by it. Clover is in wonderful condition. Conditions seem right for a big crop. But the awful loss of bees will keep the total crop down."—A. C. Ames, Wood County, Ohio.

"I will give you my plan to stop bees from robbing which worked just fine. Take a piece of wire cloth and fasten it at each side against the hive letting it rest on the bottom-board. Cut a little strip in the wire and turn up a notch for the bees to pass. When Mr. Robber once gets in he seldom gets out, if the bees being robbed have not completely given up and are offering no resistance whatever."—Mrs. J. M. Wright, Mercer County, W. Va.

"We have certainly had some of the worst weather in the history of southern Alabama since January. The oldest settlers say they have never seen anything equal to the bad weather of this year. We had nothing but rainy, cloudy, cool and stormy weather. If all the sunshine we have had this year were put together, it would not amount to three weeks. The spring flow was a complete loss, and we are having to feed stacks of sugar to keep

BEES, MEN AND THINGS

(You may find it here)

the bees alive. This weather has certainly ruined the queen-breeders in this section, so far as reputation for delivery on time may be concern-

ed. It was simply impossible to fill orders promptly under the circumstances."—V. R. Thagard, Butler County, Ala., May 28.

"Frequent rains in early spring have kept the bees in this locality from storing but little surplus, that being from persimmon intermixed with rattan. Persimmon seems to be one of our best yielders, especially in wet years, inasmuch as the flower cups turn downward, thus preventing the nectar being washed out by the rains."—W. A. Morris, Morgan County, Ala.

"The May issue of Gleanings in Bee Culture lists Mississippi as being without a foul-brood law. By an act of the legislature passed this year Mississippi now has a foul-brood law. No one in this State can ship honey, bees, queens, or any other apitary product without a certificate of health, and, of course, no such material can be shipped into this State unless it has a similar certificate to the effect that it has been inspected and found free of foul brood."—R. B. Wilson, Extension Specialist for Bee Culture in Mississippi.

"In more than 20 years of beekeeping I have never experienced such spring weather. I have been feeding for two months to keep the bees from starving, and in all that time they had only one nice warm day for a good flight. They got nothing from fruit bloom on account of so much cool and cold weather and rain. Sugar is 33 cents retail, 30 cents wholesale; and cannot be had at that figure. Another week of such weather and I won't have a colony left from 40 spring count. There are only 25 left and altogether do not have five pounds of syrup and the sugar ordered is not coming."—Jas. Backler, Madison County, Mo.

"We are in the midst of a splendid honey flow from alsike clover. It looks like the best showing for years; in fact, I have two-story ten-frame hives and three-story eight-frame hives that are ready to extract. White clover is coming fast, but I count ten to one on the alsike. After several other sources of honey there comes in October the aster, which for the past 18 or 20 years has never failed to give abundant winter stores. Altho but few people will use aster honey, yet I have a few customers who prefer it to clover honey. I sold some at 35 cents a pound, but could not extract much on account of its being candied."—Locust Land Farm & Apiaries, Washington County, Pa.

TO be sure we have already stated that the most delightful time to work with bees is at the time of queen-clipping, during fruit bloom, when the whole world is just starting anew; and yet, in spite of apparent inconsistency we would now like to say that for pure enjoyment and an expanding good will toward the whole world and everyone in it, we know of no time quite like that of the harvest when the heavily laden bees by the thousands are busily rushing in their golden wealth to the accompaniment of the most heavenly music they are capable of producing.

This spirit of work is quite contagious and the beekeeper likely feels inclined to rush about and move the world a bit himself, and, if he is an extensive beekeeper, there will probably be plenty of chance for it; but for the beginner who is preventing swarming and keeping his colonies supplied with plenty of room as we have previously advised, there will be little work for him to do until the honey is ready for removal from the hives. During this intervening time, he would do well to review carefully our last "Talk" concerning robbing, swarming and supering.

Removing the Comb Honey.

Comb honey should not be removed from the hive until the cells are completely sealed with the possible exception of a few sections in the two outside rows. If removed sooner than this, the honey will not be properly ripened and will be likely to ferment. Also such sections are not as nice looking and do not bring as high a price. On the other hand if sections are left on the hives too long, the snowy-white cappings become soiled and travel-stained by the thousands of feet daily tramping over their surface; and altho such honey is just as good, in fact a little better because riper, still it is not as beautiful and does not sell for as high a price. The different supers will be completed and therefore removed at different times. Before removing a super of comb honey, it should be placed above the supers not yet completed and just under it should be inserted an escape board, rim side up, and with escape in place. Then the super should be very carefully covered so that not a single bee may enter, for if a bee succeeds in finding a crack big enough to enter, a real case of robbing will soon be in progress, and, unless stopped, will result in one less super of comb honey. If the escape board is put on during the middle hours of the day, the super may be removed the next day.

All that is necessary to prepare comb honey for sale is to take a sharp knife and carefully scrape the particles of wax and

TALKS TO BEGINNERS

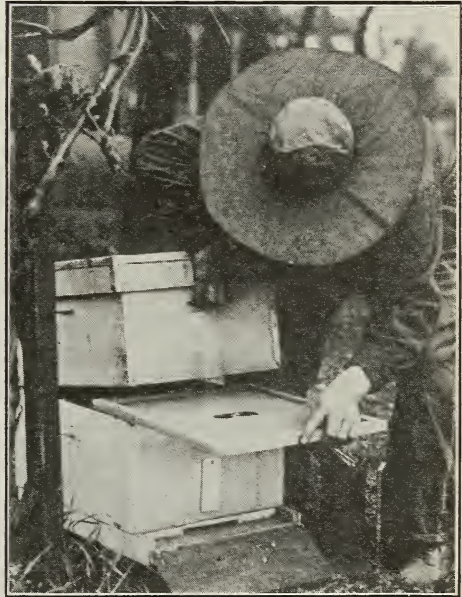
By Iona Fowls

propolis from the outsides of the sections. Sections that are to be stored for the family use should be piled carefully so that no moths may gain access.

If left in a damp place, the honey may ferment, and if left where there are too great changes of temperature it will granulate more rapidly. Therefore, comb honey should be stored in a dry warm place.

Harvesting the Extracted Honey.

All combs of extracted honey that are three-fourths sealed are ready for extracting, but in the case of extracting supers there is no great hurry for removal before the cappings become travel-stained, for at extracting time these cappings are sliced off anyway and the honey removed by means



The escape-board with rim side up is placed just below the super to be removed. In about 24 hours the bees will have left the super when it may be removed.

of an extractor. Therefore, those who have enough supers so that their bees may be supplied with plenty of room until the flow is over, will not need to extract until after the flow and then the completed supers may all be removed. When left on until completely ripened the honey is thicker and has a much finer flavor. The extracting supers should be removed by means of the escape board in exactly the same way as the comb-honey supers. When first removed the honey is warm because of the heat from the bees. Therefore it will extract more readi-

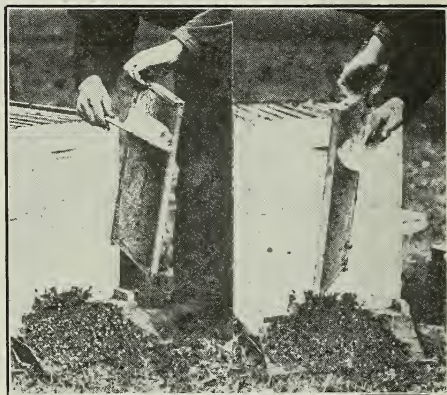
ly the same day it is removed than it will later when it has had time to cool. For the same reason some prefer the ventilated escape which allows the heat from the bees to rise into the super even after the bees have left it.

Once in a while it may happen that dead bees may clog the escape so that the bees are unable to leave the super. In such a case if one does not wish to wait another day, but prefers to take the honey immediately he may remove the combs one at a time, and holding them in a vertical position, give them a sudden shake in front of the entrance. This will remove most of the bees and the remainder may be brushed off by means of a brush, feather, or handful of grass, as shown in the illustration. The combs, one at a time, as soon as cleared of bees, should be placed in a box and covered so no robbers may find them. This work of shaking and brushing should not be resorted to unless it seems really necessary, for after the honey flow there is always danger of starting robbing.

Extracting Equipment.

The room in which the extracting is done should have screened windows and no openings anywhere large enough for robbers to enter. There should be room enough not only for the extracting equipment, but also for the supers to be stored before and after extracting. Near the window where there is a good light should be placed the uncapping barrel which stands in a galvanized tub. The barrel has both heads knocked out and is screened on the bottom with quarter-inch mesh screen, and across the

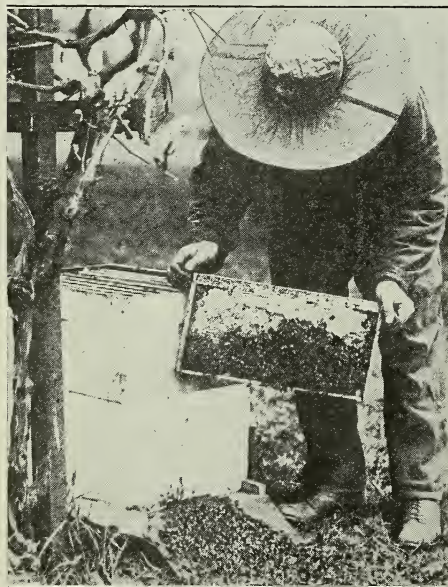
upper end about one-third of the distance from one side has a two-inch strip which is nailed in place. At the middle of the strip is a sharp-pointed nail projecting upward about an inch to hold the frame while uncapping. It may be necessary to nail two



Brushing the bees from both sides of the comb.

strips to the bottom of the barrel to support it in the tub into which the cappings are to fall.

The extractor should be firmly attached to a box which in turn is securely bolted to the floor. If placed near the wall there will be less danger of vibration which is hard on the combs and sometimes causes them to break. The box should be just the right height so that a galvanized honey pail may be placed



To shake bees from a comb, hold it as shown and give a sharp jerk. Most of the bees will be dislodged at the second or third jerk. The few bees remaining may be brushed off.

under the faucet when ready to draw off the honey from the extractor.

Near the extractor should be the straining can in which is suspended a large cheese-cloth bag attached to a barrel-hoop supported by the top of the can.

Process of Extracting.

Each comb, one at a time, should be taken from the super, held with the top bar furthest away and the lower end bar resting on the nail point of the cross piece. Then holding the upper end of the frame with the left hand and leaning the upper end slightly to the right so that the cappings may fall freely and not adhere to the sticky surface of the comb, begin at the lower end of the comb and with an extracting knife dipped in hot water cut the cappings from the entire right side of the comb, performing the operation with a kind of sawing motion. Next reverse the comb and with the top bar still away from you, remove the cappings from the other side. Then by means of the cross bar scrape any cappings adhering to the knife.

After uncapping, the combs may be placed one in each basket of the extractor, the top bars being next the hinge. Combs in opposite baskets should be of about the same weight as they are less likely to break if properly balanced. Old dark combs whose cell walls have been strengthened by sever-

al layers of cocoons will not be likely to break, but when extracting new delicate combs, it is a good plan to extract only about half of the honey from the first side, then reverse and extract the opposite side and then complete the extracting of the first.

As soon as the honey is near the reel, some of it should be drawn off at the faucet, running it into the honey pail and then emptying into the straining tank. When the tank is nearly full it may be run into sixty-pound cans or other receptacles to be stored.

The combs as fast as extracted are stacked up in the same room and toward night are piled five or six on a hive over an empty super, leaving the bees to clean out the honey still adhering.

Altho honey will probably bring a good price and the beginner will naturally wish to get as large a crop as possible let him not be penny wise and pound foolish. There is little doubt that fall will find many beekeepers short of winter stores and short of sugar for feeding. Therefore, we strongly urge that enough combs of honey be saved to carry the bees thru until the next honey flow—at least five or six full combs. These combs may be carefully stored where the moths cannot find them and not given to the bees until fall when preparing for winter.



A beginner's extracting outfit. The barrel with both heads knocked out and a coarse screen nailed to the bottom makes a very good uncapping can when supported over a tub. A large cheese-cloth bag with a barrel hoop nailed to the mouth and supported in a can, makes a good strainer. Instead of the straining can, a tight barrel may be used, provided it has a faucet at the bottom.

THE summer field meeting of the New Jersey Beekeepers' Association will be held in Samuel Buser's apiary, near North Haledon, Passaic Co., on Saturday, July 10, beginning at 9 a. m. The principal features of this meeting will be seasonable manipulations, including treatment of colonies for American foul brood. Elmer G. Carr of New Egypt, N. J. is secretary of the Association.

* * *

The annual Chautauqua of Wisconsin beekeepers will be held August 16 to 21. The meeting place will be Madison. H. F. Wilson of the beekeeping section of the Department of Economic Entomology at the University of Wisconsin is in charge.

* * *

The beekeepers of Georgia will meet on July 3 at Waycross, Georgia, for the purpose of organizing a Georgia State Beekeepers' Association. J. J. Wilder is the leading spirit in this step toward better beekeeping in this State.

* * *

The annual summer meeting and basket picnic of the Western New York Honey Producers' Association will be held on July 31 at the apiary of Frank W. Churchill, West Valley, N. Y. A good program has been provided and all interested in bees or honey are cordially invited.

* * *

The Michigan Beekeepers' Association will hold its annual summer meeting at Boyne City on July 28 and 29. Among the speakers will be E. R. Root, whose subject will be "A Fourteen Thousand Mile Trip Among the Beekeepers." A very excellent program has been prepared.

* * *

The Panhandle Beekeepers' Association and the W. Va. State Beekeepers' Association will hold their summer meeting at Elm Grove, W. Va., on Aug. 10, 11 and 12. Dr. E. F. Phillips, Kenneth Hawkins, E. R. Root, and T. K. Massie are on the list of speakers for this big meeting of the West Virginians.

* * *

The summer outing of the N. Y. State Association of Beekeepers' Societies will be held at A. N. Cogswell's apiary, Groton, N. Y., on Friday, Aug. 6. Geo. H. Rea, E. R. Root, Dr. Geo. G. Atwood, and Kenneth Hawkins are on the speakers' list for this beekeepers' event.

* * *

The summer meeting and basket picnic of Chenango County, N. Y., Beekeepers' Society will be held at the apiary of George S. Hard, Norwich, N. Y., on Thursday, July 22. This will be a meeting of practical



demonstrations in connection with modern beekeeping, including an illustrated lecture in the evening. Geo. H. Rea, Extension Specialist in Apiculture, Ithaca, N. Y., will be present and take active part in the program.

C. E. Millspaugh, who has had 18 years' experience in the marketing of bee products in American and foreign countries, has been made general manager of the California Honey Producers' Co-operative Exchange in place of Charles B. Justice, who resigned to enter business for himself. With Mr. Millspaugh as active head of the Exchange it is expected that plans for the co-operative marketing of bee products in California will be materially furthered.

* * *

At the last regular meeting of the Ohio Beekeepers' Association held in January a demand for a representative exhibit of bee products at the State Fair was presented. The plan in use in Michigan was selected, and it was voted to give it a trial in Ohio the coming fall. This plan gives the State Fair Board the privilege of stating what it desires for exhibition purposes from each producer who subscribes to send bee products, but with the understanding that what is accepted is sold and a fair price returned to the sender. James S. Hine, Secretary Ohio Beekeepers' Association, Ohio State University, Columbus, Ohio, is in charge of the work, and from him any information desired may be secured.

* * *

The beekeepers of New York won their fight in the State Legislature to secure a larger appropriation for fighting bee disease in the Empire State. A committee appointed at the New York State Beekeepers' convention did effective work at Albany last winter and spring which finally resulted in an appropriation of \$10,000 for additional inspection of bees. The same committee attended to the amendment of the foul-brood law also. This appropriation was secured by a very narrow margin as Governor Smith rejected the appropriation when first presented, but upon its re-passage, he approved it. At a conference held at the office of George G. Atwood, Albany, attended by Messrs. Charles Stewart, Mr. Wright (State Inspectors), S. D. House, and Orel L. Hershisier, the State was divided into 16 districts, each composed of one or more counties according to the amount of disease that is supposed to be present in the locality, each of which is to have a local inspector to be employed only during the season when inspection will do the most good — during the spring and summer.

IN Our Homes for July, 1919, I mentioned a series of articles in the *Sunday School Times* entitled, "How Lawyer Scofield Was Won to Christ;" and I made a couple of extracts from that article. I wish now to make another extract; and I have chosen to make it because it il-

lustrates so well the difficult things a follower of Jesus Christ is sometimes called on to do. I have had a few experiences of the kind myself. This extract also discloses the painful fact that sometimes even bad and wicked men get into the United States Senate. Below is the extract:

Mr. Pomeroy was nominated to succeed himself as Senator of the United States, in a speech in which his "great services" to the State of Kansas were fully rehearsed.

Then Senator York, the leader of the anti-Pomeroy forces, rose to his feet, deathly white. Scofield looked at him, and was afraid he would not be able even to use his voice, so overcome by emotion did he seem. But in a moment, to the utter amazement of all who heard him, he said, "Mr. President, I rise to second the nomination of S. C. Pomeroy." (Representative Scofield was not then a converted man, and he decided then and there that after the meeting he would take the senator outside and thrash him.) "But," went on Senator York, reaching to his hip pocket, and drawing out a large bundle of something, "not to a seat in the United States Senate, but to a cell in the Kansas State Penitentiary at Leavenworth." He then called to his side one of the boy pages of the legislature, and continued: "Mr. President, I am sending you by the innocent hand of this boy seven thousand dollars in greenbacks that were handed me last night by S. C. Pomeroy for my vote."

The bundle of money was carried up to the desk of the Lieutenant-Governor, and there, in the presence of all, it was laid in plain sight upon a book. There was a silence like death over the entire hall of representatives.

May God be praised that we have men in the Senate like Senator York as well as occasionally one (and we hope it is *very seldom*) like Senator Pomeroy. I can not tell from the *Sunday School Times* exactly how long ago the above transpired; but I trust and pray that the present Senate of the United States is composed of men of established and unquestioned character. It was a terribly hard ordeal for Senator York. No wonder that he was scarcely able to use his voice. I wonder if he had ever used my little emergency prayer—"Lord,



Thou hast loved righteousness and hated iniquity.—HEB. 1:9.

And beside all this, between us and you there is a great gulf fixed.—LUKE 16:26.

Let the words of my mouth and the meditation of my heart be acceptable in thy sight, O Lord, my strength and my redeemer.—PSALM 19:14.

help." If there was ever a time in his life when such a prayer was needed, it was just at that moment. The clipping does not tell us how Mr. Pomeroy received the terrible arraignment. I was particularly struck with Mr. York's manner of calling on an "innocent boy" to carry that

great roll of greenbacks to the President of the Senate.

Now, friends, let us for a moment consider my last text—the one which you have heard me talk about so much of late. Contrast the man who makes this text his daily prayer with the one who handed out \$7,000 as a bribe to get himself back again—bad and wicked man that he was—in the Senate of the United States. I do not know what the punishment for such a crime is—for crime it certainly was; but it occurs to me that the penitentiary for life would be none too severe. Who can tell what harm might be done by even one man like that in our national Senate? Now, in contrasting the man who makes that little prayer his great object in life with the man who would hand out such a bribe, and in trying to imagine the great gulf, I was reminded of the words of our second text—"Between us and you there is a great gulf fixed," etc. The Lord Jesus Christ, and he alone, can bring the sinner safely over this gulf and plant his feet on the solid rock. In our first text, righteousness and iniquity are contrasted, and there seems to be no half way between the two. Several times lately in exhorting different people whom I have met, discussing church membership, etc., and after having been unable to get a direct answer as to where they stood, I have asked the question, "Do you accept the Lord Jesus Christ as 'the Lamb of God that taketh away the sin of the world?' and do you accept him as *your* Savior and your only hope of 'everlasting' life?"

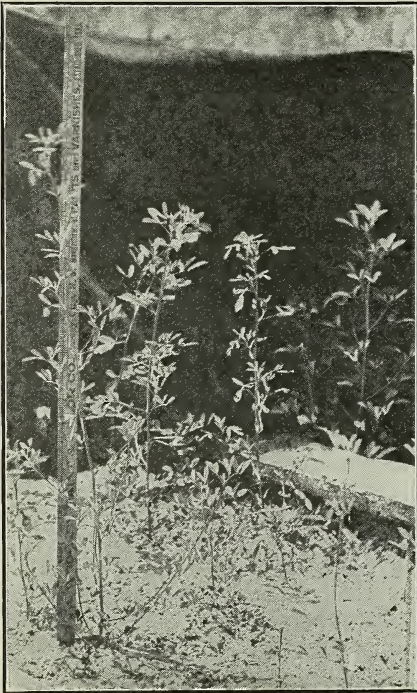
"Whosoever liveth and believeth in me, shall never die. Believest thou this?"

THE "PROMISED LAND;" "A LAND FLOWING WITH MILK AND HONEY."

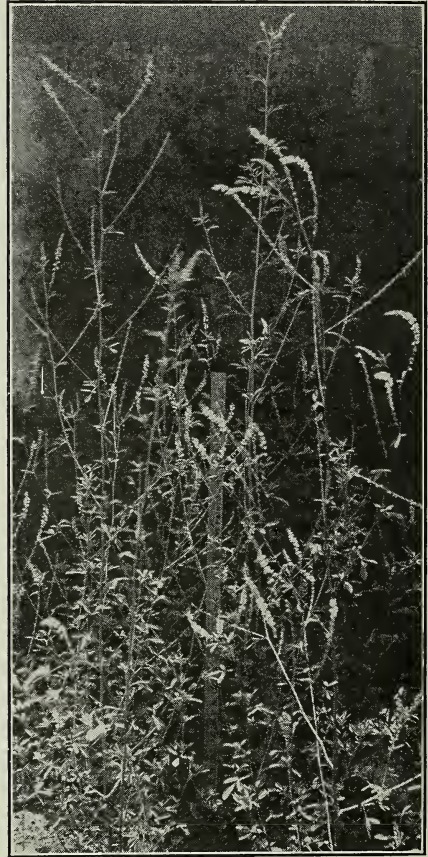
In 1918 and 1919, I had considerable to say about the sunflower, a plant which promised to furnish not only honey but milk also, thus contributing to make our land "a land flowing with milk and honey." Well, so far as the *milk* is concerned I believe the sunflower is all that has been claimed for it. In many places it is grown by the acre for filling the silo; and when mixed with corn it makes a better cattle feed for milk, butter, and cheese than corn alone. But so far as the honey is concerned there does not seem to be very much of it, and the quality is nothing extra.

Well, friends, in all that talk about sunflowers I stupidly overlooked the fact that we have a plant already that not only furnishes the very best of feed for cattle and all other farm stock but furnishes more, and I think I might safely say better, honey than any other plant in the world. It is nothing more than our old despised sweet clover growing in such rank luxuriance along our highways, especially where we have crushed limestone roads. Now, my beekeeping friends, just hold your breath a minute while I tell you something

that may surprise you. The A. I. Root Co. is now buying, bottling, and sending out something like 50 carloads of honey a



The new annual sweet-clover plant that made a growth of 20 inches in 17 days.



The new annual sweet-clover plant that made a growth of 36 inches in 24 days, or $1\frac{1}{2}$ inches a day.

year, or a carload a week we might say. Where does this honey come from? what is its source? Well, Mr. A. L. Boyden, who has charge of our honey business, astonished me by saying that all of 30 carloads out of 50 are from sweet clover; and this sweet-clover honey is certainly as handsome and delicious—that is, to my notion—as any honey in the world. Well, now, since you have had several good "breaths" over what I have told you, just hold your breath once more.

On page 325 of our June issue, I told you about a photo showing a growth of the new sweet clover 20 inches high in only 17 days. At the left is the picture I had in mind when I said that.

When I planned to have another photo taken in about 2 weeks the wind was so

unfavorable that the artist did not get a picture to suit him until June 8; and this picture it is my pleasure to give you on the previous page.

Below is a letter from our good friend the photographer:

Dear Mr. Root:—The clover in the June 8th picture is 64 inches high. I think you will be interested to know that the honeybees were very busy with the blossoms the last day I was out. I tried to photograph the bees, but when the bees were right the wind blew, so I gave it up.

I discovered a lone plant nearer your house, after I had taken the picture. This plant is also 64 inches high.

Sincerely,

WILL S. POTTER.

Bradentown, Fla., June 9, 1920.

The seed for this sweet clover was sown March 11, and the picture was taken June 8, just 88 days from the time the seed was planted. Owing to the bad weather or something else the little plants were a long time in getting started. "Getting started" means letting that tap root shoot away down after fertility that ordinary plants never reach. Now take into consideration that this enormous growth was made at a time when we had some of the hottest weather in Florida, and at the same time some of the wettest weather. I noticed by the Bradentown paper that they had had some tremendous rains right where these annual sweet-clover plants were making that vigorous growth. Please note this enormous growth of a *legume*, over five feet in less than three months.

Now, who knows but that this new forage plant will, down in Florida, make its growth, say about as high as your head, any month in the year? I am planning to go back to my Florida home some time in October, and very likely my good friend Wesley will have some little plants ready for me by the time I get there. He is going to save the seed, and will be saving it when you get this; and this seed will be mailed to all applicants as before—especially those who were disappointed by not getting seed earlier.

Later.—Since the above was written I have received from our nearest neighbor across the street a postal card as below:

Dear Mr. Root:—I was over yesterday when Mr. Potter took the pictures of the clover. Two of the plants are 64 inches high or up to my chin, and the bees are working vigorously on the blossoms. If this plant will be for the beekeepers of Florida what the sweet clover is to the beekeepers of the North, it will be a bonanza. We are having watermelons and sweet corn and peaches now.

Bradentown, Fla., June 9.

E. B. Rood.

By the way, my neighbor Rood keeps quite a lot of very choice Jersey cattle. On receipt of the above I instructed him to get some of the best plants and submit

to the sleek Jerseys and report. Very likely they will have to be given a little time to "acquire the appetite," as sweet clover is practically unknown in that region. His concluding sentence has given me the fever to get back to Florida once more, especially as Florida watermelons are just now, up here in the North, bringing not only \$1.00 but some of the biggest ones \$2.00 or more.

Just one word more about sweet-clover honey. Altho I did not suggest it in the proper place, so far as I can learn it is quite possible that sweet clover *even now* furnishes more choice honey for the market than all other plants combined. Years ago, when I kept up a catalog of honey plants, or plants bearing honey, I kept telling you that it would not pay to grow *any plant* just for honey alone; but now we have the greatest honey plant in the world, and, if I am correct, almost the greatest forage plant in the world, not only for the production of milk, butter, and cheese, but for the production of a fine quality of beef, mutton, etc.

BURLAP FROM SWEET CLOVER: STILL ANOTHER USE FOR THE "NOXIOUS WEED."

The following letter will, I am sure, be read with interest by all beekeepers:

Dear Mr. Root:—I have been a reader of "Gleanings" for some time, and always read your articles with the greatest interest and therefore know that you like some "happy surprises" once in a while.

I herewith enclose a piece of burlap made from sweet clover, as I know you are very much interested in the possibilities of sweet clover; but, probably, you knew before that sweet clover yields an enormous amount of fiber.

Yours truly,

G. HERMAN PETERSON.

Rt. 1, Box 4, Deerwood, Minn., May 18, 1920.

The sample of burlap is certainly all that could be desired for sacking or any other purpose. In fact, I think it would make a very nice blanket or lap-robe; but what impresses me most are the long fringes on the sample inclosed. When I tried to break one of them by pulling on it, it seemed to be about the stoutest piece of twine for its size I ever got hold of. Now, if sweet clover will make twine (possibly binders' twine), what is going to happen along that line in the future? The beekeepers can have the honey and the seed, and the twine and burlap factories can use the stalks; and the forage for feed ought to help largely to bring down the "high cost of living." Yes, I do remember hearing, years ago, that the stalks of sweet clover furnishes a valuable fiber.

Classified Advertisements

Notices will be inserted in these classified columns for 30 cents per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column or we will not be responsible for errors. Copy should be received by 15th of preceding month to insure insertion.

REGULAR ADVERTISERS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued while they are in good standing.)

Wm. A. Hunter, C. H. Cobb, E. S. Robinson, Murray & Stone, Buckeye Bee Co., Garden City Apiaries, A. O. Jones & H. Stevenson, L. D. Caulk Co., W. A. Matheny, F. Coombs & Sons, R. V. Stearns, F. D. Manchester, C. C. Clemens Bee Supply Co., L. R. Dockery, S. T. Crawford, T. J. Talley, W. T. Perdue, Domestic Beekeeper, Lee & Wallin, Birdie M. Hartle, J. Tom White, H. L. Murry, Robt. B. Spicer, W. W. Boyer & Co. Savings Deposit Bank Co. are now advertising only every other month. They are in good standing.

HONEY AND WAX FOR SALE

Beeswax bought and sold. Strohmeier & Arpe Co., 139 Franklin St., New York.

FOR SALE.—Clover and buckwheat honey in any style containers (glass or tin). Let us quote you. The Deroy Taylor Co., Newark, N. Y.

FOR SALE.—12,000 lbs. new crop, well-ripened Old Ky. No. 1 clover honey; in 60-lb. cans, at 22½¢ per lb. f. o. b. Brooksville. Sample 25c.
W. B. Wallin, Brooksville, Ky.

FOR SALE.—We have a very choice lot of white clover honey at 25¢ per lb. in 60-lb. cans; also some very choice fall honey at same price.
M. V. Facey, Preston, Minn.

FOR SALE.—We have a small part of our crop of white clover-basswood extracted honey left, packed in new 60-lb. cans, two to the case. Write for prices.
D. R. Townsend, Northstar, Mich.

FOR SALE.—New crop White Haitian Honey, 30-gallon barrels, 19¢ per lb.; 60-lb. tins, 20¢ per lb. California Orange Blossom Honey, 60-lb. tins, 23¢ f. o. b. New York.
Hoffman & Hauck, Inc., Woodhaven, N. Y.

HONEY AND WAX WANTED

BEEWAX WANTED.—For manufacture into SUPERIOR FOUNDATION. (Weed Process.)
Superior Honey Co., Ogden, Utah.

WANTED.—Bulk comb, section, and extracted honey. Write us what you have and your price.
J. E. Harris, Morristown, Tenn.

BEEWAX WANTED.—We are paying higher prices than usual for beeswax. Drop us a line and get our prices, either delivered at our station or your station as you choose. State how much you have and quality. Dadant & Sons, Hamilton, Illinois.

WANTED.—Beeswax. We are paying 1 and 2¢ extra for choice yellow beeswax and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address so we can identify it immediately upon arrival, and make prompt remittance.
The A. I. Root Co., Medina, Ohio.

WANTED.—Extracted and comb honey. Carload or less quantities. Send particulars by mail and samples of extracted.

Hoffman & Hauck, Inc., Woodhaven, N. Y.

FOR SALE

HONEY LABELS.—New designs. Catalog free.
Eastern Label Co., Clintonville, Conn.

FOR SALE.—A full line of Root's goods at Root's prices.
A. L. Healy, Mayaguez, Porto Rico.

FOR SALE.—Second-hand 60-lb. cans, 50¢ a case.
I. J. Stringham, Glen Cove, N. Y.

FOR SALE.—SUPERIOR FOUNDATION, "Best by Test." Let us prove it. Order now.
Superior Honey Co., Ogden, Utah.

We can save you money on Cypress hives, frames, etc. Write for prices.
Sarasota Bee Co., Sarasota, Fla.

Good second-hand honey cans, 35¢ per case; 170-pound kegs at 25¢ each. How many?
J. E. Crane & Son, Middlebury, Vt.

FOR SALE.—8 10-frame hives with bees and empty beehives cheap. Write
Mrs. Albert Hoch, c/o D. Thiessen, Colony, Okla.

FOR SALE.—Root automatic extractor B. R. No. 15. R. T. Spencer, 214 North Cherry St. Lebanon, Ohio.

FOR SALE.—Second-hand honey tins, two per case, in exceptionally fine condition at 50¢ per case.
Hoffman & Hauck, Inc., Woodhaven, N. Y.

How many queens have you lost introducing? Try "The Safe Way," push-in-comb introducing cage, 50¢. Postpaid. O. S. Rexford, Winsted, Conn.

FOR SALE.—Ten-frame standard dovetailed hives in lots of from one to fifty. Very cheap. Write for prices.
Wm. Craig, Aitkin, Minn.

ROOT'S BEE SUPPLIES.—For the Central Southwest Beekeeper. Beeswax wanted. Free catalog.
Stiles Bee Supply Co., Stillwater, Okla.

FOR SALE.—12 Buckeye double-walled 10-fr. hives, nailed and painted, all complete except frames. Used two seasons, \$2.50 each.
Frank Roberts, Dover Point, N. H.

PORTER BEE ESCAPES save honey, time, and money. Great labor-savers. For sale by all dealers in bee supplies.
R. & E. C. Porter, Lewistown, Ills.

FOR SALE.—Good second-hand empty 60-lb. honey cans, two cans to the case, at 60¢ per case f. o. b. Cincinnati. Terms, cash with order. C. H. W. Weber & Co., 2146 Central Ave., Cincinnati, O.

FLORIDA BEEKEEPERS.—You save money by placing your order for Root's Bee Supplies with us. We carry the complete line. Will buy your beeswax. Write for catalog.
Crenshaw Bros. Seed Co., Tampa, Fla.

FRAME SPACERS.—The very best way to space frames in a hive, and space at exact distance, also space themselves. Easy to take out and put in. Never sticks. Plan and patterns for only \$1.00.
M. F. Perry, Bradentown, Fla.

FOR SALE.—One 8-frame Root's automatic power honey-extractor; one honey pump, one gasoline engine. I will sell all together, or any one separately. Write for price.
Elmer Hutchinson, Lake City, Mich.

FOR SALE.—Good second-hand double-deck comb-honey shipping cases for 4¼ x 4¼ x 1½ sections, 25¢ per case, f. o. b. Cincinnati. Terms, cash with order. C. H. W. Weber & Co., 2146 Central Ave., Cincinnati, Ohio.

CANADIAN BEE SUPPLY & HONEY CO., Ltd.—73 Jarvis St., Toronto, Ont. (Note new address.) We have made-in-Canada goods; also can supply Root's goods on order. Extractors and engines; GLEANINGS and all kinds of bee literature. Get the best. Catalog free.

FOR SALE.—Root's Extractors and Smokers, Dadant's Foundation, and a full line of Lewis' Beeware. Our new price list will interest you. We pay 38c in cash and 40c in trade for clean yellow beeswax delivered in Denver. The Colorado Honey Producers' Association, 1424 Market St., Denver, Colo.

FOR SALE.—60 10-frame supers used one season with drawn-out foundation free from disease and wired frames, 35c each; 600 Hoffman frames at 3c each; 40 Minnesota bottom-board reversibles, at 50c each; 40 metal-top covers at 50c each. F. O. B. Spring Park, Minn. Mail check to Paul Knechtges, 1664 Laurel Ave., St. Paul, Minn.

REAL ESTATE

For Quick Sale My Home,—with 117 acres of farm land, 20 acres planted to truck and farm crops, balance pasture and woodland. 100 rods from school and trunk roads. Well, general farm buildings on R. F. D., and phone line. Must sell. Price with crop, \$2200.

Otto Scholze, Millston, R. D. 1, Wis.

FOR SALE.—20 acres in olives and oranges in frostless district, $\frac{3}{4}$ mile from paved highway, new 5-room bungalow with bath, solar hot water system, electric lights, electric irrigation plant, \$700 per acre, terms. 100 colonies of bees and equipment, \$1200, with place. J. V. Dewhurst, Ojar, Calif.

FLORIDA.—A gentleman farmer home on the river. Fishing and boating. 14 miles from Tampa on brick road. 15 acres good land, nice new bungalow, garage, stable, outbuildings, shade trees, flowers, shrubbery, small orange grove. Ideal bee location. Price, \$5000. Owner moving to larger property. Photograph if desired.

Edmund J. Courtot, Owner, Sutherland, Fla.

WANTS AND EXCHANGE

EXCHANGE Italian queen for a small printing press or rifle, Wright.

B. O. Brown, Kingsport, R. D. 3, Tenn.

WANTED.—Old combs and cappings for rendering on shaves. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

WANTED.—Shipments of old combs and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut St., Cincinnati, O.

OLD COMBS WANTED.—Our steam wax-presses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our new 1920 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Sons, Hamilton, Illinois.

BEEES AND QUEENS

Finest Italian queens, Send for booklet and price list. Jay Smith, R. D. No. 3, Vincennes, Ind.

Hardy Italian queens, \$1.00 each.

W. G. Lauver, Middletown, Pa.

Golden Italian queens, untested, \$1.25 each; dozen, \$12.00. E. A. Simmons, Greenville, Ala.

FOR SALE.—1920 Golden Italian queens, price list free. Write E. E. Lawrence, Doniphan, Mo.

THAGARD'S Italian queens, circular free, see larger ad elsewhere. V. R. Thagard, Greenville, Ala.

When it's GOLDEN it's Phelps's. Try one and be convinced. Virgins, \$1.00; mated, \$2.00.

C. W. Phelps & Son, Binghamton, N. Y.

Simmons Strain, golden and three-banded queens; 1, \$2.00; 6, \$10.00. Also nuclei.

Allen R. Simmons, Claverack, N. Y.

FOR SALE.—Italian queens, three-banded untested, \$1.25 each; 6, \$7.00; 12, \$13.00. Tested queens, \$2.50 each. Robt. B. Spicer, Wharton, N. J.

FOR SALE.—Italian queens, mailed as soon as hatched. Safe arrival guaranteed, 1, 75c; 10, \$6.00. Evan Jones, Franklinville, N. J.

FOR SALE.—Italian queens, three-banded and Golden, untested, \$1.25 each; 6, \$6.50; 12, \$13.00. Now ready. G. H. Merrill, Pickens, S. C.

FOR SALE.—Pure Italian queens, untested, \$1.50 each; \$15.00 per dozen. Tested, \$2.50 each. Satisfaction guaranteed.

D. P. Barrett, Ann Arbor, R. D. No. 3, Mich.

FOR SALE.—My famous three-band Italian queens, one for \$1.25; six for \$7.00. From June 1 to November.

J. W. Romberger, 3113 Locust St., St. Joseph, Mo.

FOR SALE.—Leather-colored Italian queens from Dr. Miller's breeder. Virgins, \$1.00; tested, \$1.50. July 1, 5, \$6.00; 10, \$11.00.

F. R. Davis, Stanfordville, Dutchess Co., N. Y.

FOR SALE.—Best three-banded Italian queens ready June 10. Untested only, one, \$1.50; 6, \$8.00; 12, \$15.00. Particulars on request.

Ross B. Scott, Lagrange, R. D. No. 4, Ind.

FOR SALE.—QUEENS. Italian queens of excellent stock will be ready to mail June 1. Untested, \$1.50 each; 6, \$7.50; 12, \$14.00.

J. D. Harrah, R. D. No. 1, Freewater, Oregon.

FOR SALE.—Leather-colored Italian queens, tested, until June 1, \$2.50; after \$2.00. Untested \$1.25; 12, \$13.00. Root's goods at Root's prices.

A. W. Yates, 15 Chapman St., Hartford, Conn.

FOR SALE.—Golden and three-banded queens, untested, April, May, and June delivery, \$1.25 each; \$12.50 per dozen. Satisfaction.

R. O. Co., Greenville, R. D. No. 4, Ala.

Golden queens ready April 15th. One queen, \$1.50; 6, \$7.50; 12, \$14.00; 100, \$100.00. Virgins, 75c each.

W. W. Talley, Greenville, R. D. No. 4, Ala.

FOR SALE.—Golden queens. Orders filled in rotation. Untested, \$1.10; selected untested, \$1.50 each. Safe arrival.

Hazel V. Bonkemeyer, Randleman, R. D. 2, N. C.

BEEES BY THE POUND.—Also QUEENS. Booking orders now. FREE circulars give details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas, E. B. Ault, Prop.

FOR SALE.—Hardy Northern-bred Italian queens, untested, \$2.00 each; 6, for \$11.00; select tested, limited number, \$3.00 each after June 1.

Dr. C. E. Sheldon, Coeur d'Alene, Idaho.

PHELPS' GOLDEN QUEENS will please you. Mated, \$2.00. Try one and you will be convinced.

C. W. Phelps & Son, Binghamton, N. Y.

FOR SALE.—Pure Italian queens, packages and nuclei. One untested queen, \$1.50; 6, \$7.50; 12, \$13.50; 50, \$55.00; 100, \$100.00.

Golden Star Apiaries San Jose, Calif.

Highest grade three-banded Italian queens. Virgins, 75c each; untested, each, \$1.25; 6, \$6.50; 12, \$12.00; 50, \$47.50; nuclei, \$3.00 per frame, queens extra. No disease, and satisfaction guaranteed. A. E. Crandall, Berlin, Conn.

PURE ITALIAN QUEENS.—Not the cheapest, but the best we can grow; bright yellow, with clean bill of health; sure to please; such as we use in our own yards. Untested, \$1.25; \$14.00 per dozen.
J. B. Notestein, Bradentown, Fla.

FOR SALE.—1920 prices for "She suits me" queens. Untested Italian queens, from May 15 to June 15, \$1.50 each. After June 15, \$1.30 each; \$12.50 for 10; \$11.00 each when 25 or more are ordered. Allan Latham, Norwichtown, Conn.

FOR SALE.—3-banded Dr. Miller and Walker's queens, after June 10 (am booked full until then), \$1.25 each, 6 for \$7.00, 12 for \$13.00. Selects, 25c each higher.
Curd Walker, Jellico, R. D. No. 1, Box 18, Tenn.

FOR SALE.—Golden Italian queens, untested, \$1.15; 6 for \$6.50; 12 or more, \$1.00 each; tested \$2.00 each; select tested, \$3.00 each; extra-select tested, \$4.00 each. No bees for sale.
D. T. Gaster, Randleman, R. D. 2, N. C.

PHELPS' GOLDEN ITALIAN QUEENS combine the qualities you want. They are GREAT HONEY-GATHERERS, BEAUTIFUL and GEN-TLE. Virgins, \$1.00; mated, \$2.00.
C. W. Phelps & Son, Binghamton, N. Y.

Golden Italian queens that produce golden bees; the highest kind, gentle, and as good honey-gatherers as can be found; May to August, untested, each, \$2.00; six, \$8.00; doz., \$15.00; tested, \$4.00; breeders, \$5.00 to \$20.00. J. B. Brockwell, Barnettts, Va.

FOR SALE.—Three-band leather-colored Italian queens. Safe arrival guaranteed. No disease. Hustlers, none better. 1, \$1.00; 12, \$10. Write for circular and prices on quantities.
J. M. Cutts, R. D. No. 1, Montgomery, Ala.

FOR SALE.—Mr. Beeman, head your colonies of bees with the best Italian stock raised in the South. One queen, \$1.25; 12 queens, \$14.00. One pound of bees with queen, postpaid, \$6.00. Safe arrival and satisfaction guaranteed.
M. Bates, Greenville, R. D. No. 4, Ala.

DAY-OLD QUEENS at practical prices. Superior improved Italian stock. Mailed in safety introducing cages. Safe arrival guaranteed to any part of the U. S. and Canada. Send for circular. Prices, 1, 75c; 10, \$6.00; 100, \$60.00.
James McKee, Riverside, Calif.

BUSINESS-FIRST QUEENS.—Untested, \$1.00 each; \$11.00 per doz.; select untested, \$1.50 each; \$12.00 per doz.; tested, \$2.00 each; select tested, \$2.50 each; breeding queens, \$5.00 and \$10.00 each. Safe arrival guaranteed in the United States.
M. F. Perry, Bradentown, Fla.

We have enlarged our queen yard considerably. We can take care of orders better than ever, large or small. April 15 to June 1, untested queens, \$1.25; tested, \$2.50; untested, \$115.00 per 100. After June 1, \$1.00 each or \$90.00 per 100. J. A. Jones & Son, Montgomery, R. D. No. 1, Box 11a, Ala.

ITALIAN QUEENS.—Three-banded, select untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness, and perfect markings. Price, \$1.25 each; 12 or more, \$1.00 each. Send for circular.
J. H. Haughey, Berrien Springs, Mich.

QUEENS.—Select three-banded Italians. Reared from the best mothers and mated to choice drones. Ready to ship May 1. Untested, one, \$2.00; six, \$9.00; twelve, \$16.80. After June 1 one, \$1.50; six, \$8.00; twelve, \$14.00. Select tested, \$3.00 each. Write for prices per hundred. Descriptive circular free. Hardin S. Foster, Dept. G. Columbia, Tenn.

FOR SALE.—Untested Golden Italian queens, \$1.25 each; tested queens, \$2.50 each. Satisfaction guaranteed.

J. F. Michael, Winchester, R. D. No. 1, Ind.

FOR SALE.—Earliest queen-rearing yard in Colorado. Young queens now ready. Tested Golden breeding queens a specialty. A. C. Stanley and E. C. Bird, 1421 Walnut St., Boulder, Colo.

"Those who think must govern those who toil," for the busy bee man who must keep an efficient force always at his command in the hive there's no helper equal to Victor's Italian queens. Mated, \$1.25 each; 6, \$7.00; 12, \$13.50.

Julius Victor, Martinsville, N. Y.

BOZZALLA LIGURIAN QUEENS.—Import direct from Italy, selected tested Italian queens, \$3.50 each. Every queen comes from Enrico Bozzalla's Queen Rearing Apiaries to you direct. No risk, Safe arrival guaranteed. Remit to sole agent, H. M. Stich, Riccartbar Ave., Paisley, Scotland.

TESTED QUEENS.—Three-banded leather-colored Italians descended from the celebrated Moore strain. These queens are one year or less old, right in their prime. Price, \$2.00 each. Safe arrival and satisfaction guaranteed. A few breeding queens, \$5.00 each.

Elmer Hutchinson & Son, Lake City, Mich.

FOR SALE.—By return mail, three-banded leather-colored Italian queens from the very best honey-gathering strain, \$1.50 each or \$15.00 per dozen; tested, \$2.00 each. You can buy cheaper queens elsewhere, but you can not get better queens anywhere. Delivery and satisfaction guaranteed. I have no more 2-lb. package bees for sale this season.
Jasper Knight, Hayneville, Ala.

FOR SALE.—Italian queens. Prices for untested in June, \$1.50 each; 6, \$8.25; 12, \$16.00; tested \$2.50 each. After July 1, untested, \$1.25 each; 6, \$7.00; 12, \$13.50; tested, \$2.00 each; virgins, 75c each. Mismatched queens replaced if returned in 30 days. Dead queens replaced if returned by return mail. Untested, ready to ship June 1 to June 10.
R. B. Grout, Jamaica, Vt.

FOR SALE.—Quirin's hardy northern-bred Italians will please you. All our yards are wintered on summer stands; more than 25 years a commercial queen-breeder. Tested and breeding queens ready almost any time weather permits mailing. Untested ready about June 1. Orders booked now. Testimonials and price for asking.

H. G. Quirin, Bellevue, Ohio.

1920 prices on nuclei and queens. Miller strain. Queens, untested, \$1.50 each; \$15.00 per doz.; tested \$2.00 each, \$22.00 per doz. One-frame nucleus, \$3.00; two-frame, \$5.00; three-frame, \$6.50, without queens, f. o. b. Macon, Miss. We have never had any bee or brood disease here. Will have no queens except for nuclei until June 1. Safe arrival and satisfaction guaranteed.

Geo. A. Hummer & Sons, Prairie Point, Miss.

ITALIAN QUEENS.—The Old Reliable three-banded Italians, the best all-around bee to be had. Queens ready to mail April 1, 1920. Will book orders now. Will guarantee safe arrival in United States and Canada. Prices for April and May: Untested, \$1.50; 6, \$8.00; 12, \$15.00. Tested, \$2.25; 6, \$12.00; 12, \$22.00. Select tested, \$3.00 each. Descriptive circular and price list free.

John G. Miller, 723 C St., Corpus Christi, Texas.

MISCELLANEOUS

FOR SALE.—Guinea Pigs. Brood sows, \$2.50. Young sows, \$1.50. Males, \$1.00. Pleasant Hill Caviery, 1629 E. Florida St., Springfield, Mo.

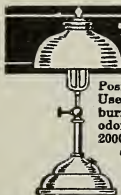
FOR SALE.—140 shares of Aluminum Honeycomb Co. stock, at \$50.00.

Frank M. Batty, Oxnard, Calif.

Write for shipping tags and our prices for rendering your old combs, cappings, etc. We guarantee a first-class job. The Deroy Taylor Co., Newark, N. Y.

HELP WANTED

WANTED.—One experienced, man and students or helpers in our large bee business; good chance to learn. Modern equipment and outfit, including auto truck, located near summer resorts. Write, giving age, height, weight, experience, reference, and wages wanted. W. A. Latshaw Co., Clarion, Mich.



The "BEST" LIGHT

Positively the cheapest and strongest light on earth. Used in every country on the globe. Makes and burns its own gas. Casts no shadows. Clean and odorless. Absolutely safe. Over 200 styles. 100 to 2000 Candle Power. Fully Guaranteed. Write for catalog. AGENTS WANTED EVERYWHERE.

THE BEST LIGHT CO.
306 E. 5th St., Canton, O.

NEWMAN'S ITALIAN QUEENS

Bred from the best. No disease. Satisfaction and safe arrival guaranteed.

Untested, \$1.50; 6, \$8.00; 12, \$15.00. Select Untested, \$2.00; 6, \$10.00; 12, \$19.00. Circular free.

A. H. NEWMAN, - - MORGAN, KY.

NEW ENGLAND

BEEKEEPERS will find a complete stock of up-to-date supplies here. Remember we are in the shipping center of New England. If you do not have a 1920 catalog send for one at once.

H. H. Jepson, 182 Friend St., Boston, Mass.

Hand - Moore Queens

How many of you, let me see, have tested out the Hand-Moore bee? Our bees get honey by the ton, and honey's what brings the mon.' So if you want your honest share, and are not content with just the tare, buy Hand-Moore queens, that's what I say, and do it, yes, and right away. Untested only, \$1.50 each; 6, \$8.00; 12, \$15.00.

W. A. Latshaw Co., Clarion, Mich.



Mott's Northern-bred Italian Queens

Untested, \$1.00 each; \$12.00 per dozen. Select untested, \$1.25 each; \$15.00 per dozen. Select guaranteed, pure mated, \$1.50 each. Select tested, \$2.50 each.

Plans "How to Introduce Queens, and Increase," 25c

E. E. Mott, - - Glenwood, Mich.

Leininger's Strain ITALIANS

have a record of 35 years. Queens ready in June. Untested, each, \$1.75; 6, \$8.50. Tested, each, \$2.50; 6, \$14.00. Select breeders, \$15.00 each. Every queen guaranteed.

Fred Leininger & Son, Delphos, O.

INDIANOLA APIARY

Will furnish 3-banded Italian Bees and Queens as follows: Untested Queens, \$1.00; Tested, \$1.50. Nucleus, \$2 per frame, queen extra.

J.W. SHERMAN, VALDOSTA, GA.

QUEENS

Golden and three-band Italians. The kind that fill from two to four supers.

Untested, \$2.00 each; \$11.00 for 6; \$43.00 for 25. No discount for 50 or 100 lots. Tested, \$3.00 each; \$16.00 for 6. Send orders for queens as early as possible. Full colonies (bees and queen) \$12.00 and \$15.00 for 8- and 10-frame Root Co. hives.

S. C. R. I. Red eggs for hatching (280 egg trapnested strains) \$2.50 per 15. \$12.00 per 100.

MISS LULU GOODWIN, Mankato, Box 294, Minn.

Established 1885

Write us for catalog.

BEEKEEPERS' SUPPLIES

The Kind You Want and The Kind That Bees Need.

We have a good assortment in stock of bee supplies that are mostly needed in every apiary. The A. I. Root Co's brand. Let us hear from you; information given to all inquiries. Beeswax wanted for supplies or cash.

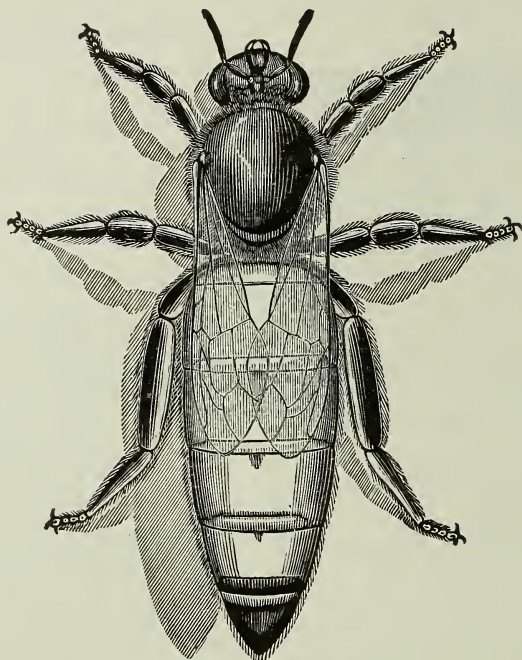
John Nebel & Son Supply Co.
High Hill, Montgomery Co., Mo.

MICHIGAN-BRED QUEENS—THREE-BANDED ITALIANS ONLY TESTED DISEASE-RESISTERS

PRICES	June 15 to July 15			July 15 to Oct. 1			
	1	6	12	1	6	12	100
Untested	\$1.50	\$8.00	\$15.00	\$1.30	\$7.50	\$13.50	\$110.00
Select Untested	1.75	9.00	16.00	1.60	8.00	14.00	115.00
Select Tested any time after June 20				3.00	16.00	29.00	
Select Day-old Virgins after June 160	3.50	6.50	50.00

D. A. DAVIS, 216 GREENWOOD, BIRMINGHAM, MICHIGAN

ROOT QUEENS



Highest
Quality

Large
Quantity

Why Order Root Queens

Our queens are bred by as skillful and experienced queen-breeders as can be found in the United States. There are very few places where queens are reared under as favorable conditions as in our own Ohio queen-rearing yards in midsummer. The strain is proved and of the highest quality. We guarantee that better queens than ours cannot be bought anywhere.

OUR JULY PRICES :

1 Untested Queen	\$ 2.00	24 Untested Queens ..	\$40.80
6 Untested Queens ...	11.40	48 Untested Queens ..	76.80
12 Untested Queens ...	21.60	100 Untested Queens and up-	
		wards—special prices quoted.	

Inquiries as to tested or breeding queens invited. The demand for these often exceeds our supply. So order well in advance.

Write or wire when deliveries are wanted. We are producing in large quantities this season, and with advanced information as to the wants of our customers we shall at times be able to quote unusually attractive prices on large quantities. Make your plans and order NOW for your August needs.

The A. I. Root Company, Medina, Ohio

World's Best Roofing at Factory Prices

"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofings, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Positively greatest offer ever made.

Edwards "Reo" Metal Shingles
cost less; outlast three ordinary roofs. No painting or repairs. Guaranteed rot-free, rust, lightning proof.

Free Roofing Book
Get our wonderfully low prices and free samples. We sell direct to you and save you all in-between dealer's profits. Ask for Book No. 783

LOW PRICED GARAGES
Lowest prices on Ready-Made Fire-Proof Steel Garages. Set up any place. Send postal for Garage Book, showing styles.

THE EDWARDS MFG. CO.,
783-783 Pike St., Cincinnati, O.

FREE Samples & Roofing Book



ATTENTION
Pacific Northwest Beekeepers

We handle a full line of supplies for beekeepers, including Italian Queens. Write us your requirements and for our catalog B. It's free.

Spokane Seed Company, Spokane, Wash.
904 1/2 First Avenue

MASON BEE SUPPLY COMPANY

MECHANIC FALLS, MAINE

From 1897 to 1920 the Northeastern Branch of The A. I. Root Company

Prompt and Efficient Service
BECAUSE—Only Root's Goods are sold. It is a business with us—not a side line. Eight mails daily. Two lines of railway. If you have not received 1920 catalog send name at once.

"Special Crops" A high-class illustrated monthly journal devoted to the Growing and Marketing of Ginseng, Golden Seal, Senega Root, Belladonna, and other unusual crops. \$1.00 per year. Sample copy 10c. Address Special Crops, Box C, Skaneateles, New York

ALWAYS GOOD QUEENS

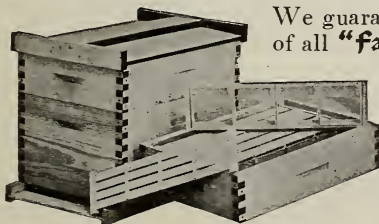
I furnish the A. I. Root strain of resistant queens that produce as good as the best of honey-gathering leather-colored workers.

A trial will convince you.

UNTESTED—\$1.50 each;	- - - - -	25 or more, \$1.40
TESTED — \$2.50 each;	- - - - -	25 or more, \$2.25
SELECT TESTED, \$3.00.		

A. J. PINARD, MORGAN HILL, CALIFORNIA

Safe Arrival Guaranteed by "falcon"



We guarantee the safe arrival and absolute satisfaction of all "falcon" queens and bee supplies bought from us. Nor does our service end after the goods reach you.

Keep in touch with us at all times and in all seasons; we are equally interested in your results with "falcon" articles, as in all your beekeeping needs.

Write for Our Red Catalog

W. T. FALCONER MANUFACTURING CO.

Falconer (near Jamestown), N. Y., U. S. A.

"Where the best beehives come from"

QUEENS OF QUALITY

FARMER'S QUEENS SPEAK FOR THEMSELVES.

Mr. Beekeeper, why not get a good queen while you are buying? Farmer's queens produce workers that fill the supers quick with honey that is most delicious to eat. They are bred for honey production strictly. Shipping season is here; now is your time to head your colonies with a good queen; one that will keep the hive chock-full of bees at all times, makes the biggest yields of honey.

PRICES FROM JUNE TO SEPTEMBER.

	1	6	12	100
Untested	\$1.50	\$7.50	\$18.50	\$1.00 each
Select untested	1.75	9.00	16.50	1.25 each
Tested	2.50	13.00	24.50	2.00 each
Select tested	4.00	22.00	41.50	3.35 each

We guarantee everything we sell; you take no risk when you deal with us; safe arrival and satisfaction is our motto; customer is the judge. Reference: Bank of Ramer, Ramer, Ala.

THE FARMER APIARIES, - - - - - RAMER, ALABAMA

"Where the Good Queens come from"

QUALITY QUEENS ^A_T QUANTITY PRICES

BREED THREE-BAND ITALIANS ONLY

PRICES UNTIL NOVEMBER 1:

	1	6	12
Untested	\$1.50	\$8.00	\$14.00
Select Untested	1.75	9.00	16.00
Select Tested	2.75 each		

Now is the time to lay the foundation for next year's honey crop by heading those colonies with **YOUNG VIGOROUS QUEENS**. Let's make each and every colony 100% efficient.

Satisfaction and safe arrival in U. S. and Canada.

HERMAN McCONNELL -:- -:- ROBINSON, ILLINOIS

THAGARD'S ITALIAN QUEENS

Bred for Quality. My Three-band queens are bred from imported stock; they are hardy, prolific, gentle, disease-resisting, and honey-producers.

	After July 1st.		
	1	6	12
Untested	\$1.50	\$7.50	\$13.50
Select Untested	1.75	9.00	16.00
Tested	2.50	13.00	24.00
Select Tested	5.00	22.00	41.50

No reduction in prices after July 1st. as stated in circular.

V. R. THAGARD -:- -:- GREENVILLE, ALABAMA

1920 QUEENS 1920

A colony of bees with a poor queen is worth the hive and fixtures. A colony of bees with a good queen has no limit in value, the honey flow alone being the determining factor. I am using my thirty-five years of beekeeping and queen-rearing experience to produce the best that can be produced, and sell at a figure that will sustain the high quality of my queens.

PRICES

One, \$2; three, \$5.50; six, \$10; twelve, \$19. All amounts over one dozen, \$1.50 each. I sell only untested queens and make a specialty of this line. I select no queens, but try to have them all so good that there is little chance for selection. 1920 circular now ready.

Season opens April first.

P. C. CHADWICK

KERN COUNTY

DELANO, CALIF.

SHADE TREES

SHADE Trees are as necessary on the lawn as furniture in the house. And the best are so inexpensive that all can afford them. We have sturdy Norway Maples, Oriental Planes, Oaks, Elms and practically all desirable varieties. Harrison's Evergreens and Shrubbery transform plain dooryards into fine lawns.

Write for catalog today.

Harrison's Nurseries

"Largest growers of fruit trees in the world"
Box 65 Berlin Maryland



QUEENS OF MOORE'S STRAIN OF ITALIANS

Produce Workers
*That fill the super quick
With honey nice and thick*

They have won a world-wide reputation for honey-gathering, hardiness, gentleness, etc.
Untested queens \$1.50; 6, \$8.00; 12, \$15.00
Select untested, \$2.00; 6, \$10.00; 12, \$19.00
Safe arrival and satisfaction guaranteed.
Circular free.

J. P. MOORE, Queen Breeder
ROUTE 1 MORGAN, KY.

Beeswax Wanted

In big and small shipments, to keep Buck's Weed-process foundation factory going. We have greatly increased the capacity of our plant for 1920. We are paying higher prices than ever for wax. We work wax for cash or on shares.

Root's Bee-supplies

Big stock, wholesale and retail. - Big catalog free.

Carl F. Buck

The Comb-foundation Specialist
Augusta, Kansas

Established 1899

Now that the honey season is here in full blast—

Now that minutes of the long summer days are, to the bees, what pennies are to dollars—

You will want your supplies shipped over the shortest possible route, with the least possible delay. We have a full line of the goods needed to make the season a success, and we will hurry your order along with all possible speed.

Do you realize, Mr. Honey Producer, that we are located in one of the best shipping centers of the country, and that we can make shipment over any one of nine trunk lines to your very door?

And that we are anxious to do all we can to help the bees coin each minute? And you every possible dollar? Use us.

The A. I. Root Company of Iowa,
Council Bluffs, Iowa

More About Luther Burbank.—Cont'd from p. 411.
one fault, they are entirely without fragrance.

When I was tying them to stakes a few days ago—many of the great plants I cannot reach around—I thought, "How I wish Mr. Burbank would bestow fragrance on the larkspur," and then I came into the house and read in one of his books of a larkspur which he had greatly increased in size and given a delightful fragrance. You may be sure I shall order some seed for next year, if it is on the market.

On reading this over my official censor, married to me, suggested that if Mr. Burbank had retained his interest in bees—he used to keep them years ago—he would by this time have bred a red clover in which the bees could easily reach the nectar. Now I wonder whether he would have changed the clover or the bees. A man who can create a thornless blackberry might have bred a race of bees with long proboscis and no stinging at the opposite end, and possibly he would have given his pets beautiful wings like those of the butterfly.

Now, please don't ask me to make copy of Mr. Burbank again; at least, not until after I have been able to take advantage of his cordial invitation to "come again," which I hope to be able to do some time next year.

In the meantime it is pleasant to remember that in sunny California a great and wise man is working with a skill and knowledge, which only he has, to improve and increase the food supply, to beautify the flowers, and to make this world a better place for all of us.

NOTICE.—Prices on Quirin's queens as given in June issue was an error, correct prices given below.

QUEENS!

Quirin's Improved Superior Italian Queens. They are Northern Bred and Hardy. Over 20 Years a Breeder.

PRICES	Before July 1st			After July 1st		
	1	6	12	1	6	12
Select untested - -	\$1.50	\$8.00	\$15.00	\$1.00	\$5.50	\$10.00
Tested - - - - -	2.00	10.00	18.00	1.50	8.00	14.00
Select tested - - -	2.50	14.00	25.00	2.00	10.00	18.00

BREEDERS \$5.00 each. If wanted in a two-frame Nucleus, add \$5.00. No bees sold except where a breeder is wanted in a nucleus.

Safe delivery guaranteed; all grades of queens now ready to mail in reasonable quantities.

Send for testimonials. Orders booked now

H. G. Quirin, the Queen-breeder
Bellevue, Ohio

This Ball Bearing APACHE

Grist Mill

PREPAID FOR ONLY

\$800



FEED the hopper, turn the wheel, and enjoy making your own wholesome whole wheat or graham flour, old-fashioned corn meal, rye flour, chops and hominy, and *bring down living cost.* Best coffee and spice grinder. If you have poultry, grind your chicken feed, save feed money and get more eggs.

Apache grinding plates of special mixture iron made to give longest wear. Steel ball bearings make it only a boy's job to run it. Send money or check today. Satisfaction guaranteed. For the present we can make prompt delivery. So don't delay.

A. H. PATCH, Inc., Clarksville, Tenn.

The Apache Grist Mill is companion to the Black Hawk Corn Sheller, famous for 35 years for its "Can't Wear Out" Guarantee.

In NEW YORK

OUR NEW OFFICES
AND WAREHOUSE
ARE NOW NEWLY
AND PERMANENT-
LY LOCATED IN
LARGER AND BET-
TER QUARTERS
OWNED BY OUR-
SELVES, AT

23 Leonard Street

THE A. I. ROOT CO.

"Best" Hand Lantern



A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. Agents wanted. Big Profits. Write for Catalog. **THE BEST LIGHT CO.**
306 E. 5th St., Canton, O.

BEE SUPPLIES IN DIXIE

Dependable Goods with
prompt service. Save time
and transportation costs.

L. W. Crovatt, Savannah, Ga.
Box 134.

"QUEENS OF QUALITY"

3-band Italians only. Our breeding queen for this year comes from an outyard that averaged 110 lbs. last year, this particular colony storing 150 lbs. Queens of this strain are easily worth double what we are selling them for. Untested \$1.50 each. Circular.

J. I. BANKS, DOWELLTOWN, TENN.

I. F. MILLER'S STRAIN

Italian Queen bees for sale. Northern-bred, for business from my best, *Superior Breeders*; gentle, roll honey in, hardy, winter well, not inclined to swarm, three banded. Queens a specialty, twenty-six years' breeding experience. Satisfaction guaranteed. Safe arrival in U. S. and Canada.

Untested . . \$1.40; 3, \$3.75; 6, \$7.00; 12, \$13.00

Select Unt. . \$1.65; 3, \$4.50; 6, \$8.50; 12, \$16.00

I. F. MILLER, Rt. No. 2, BROOKVILLE, PA.

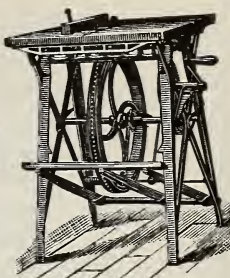
BARNES' Hand and Foot Power Machinery

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

Machines on Trial

Send for illustrated catalog and prices

W. F. & JOHN BARNES CO
545 Ruby Street
ROCKFORD, ILLINOIS



PATENTS Practice in Patent Office and Court
Patent Counsel of The A. I. Root Co
Chas. J. Williamson, McLachlan Building,
WASHINGTON, D. C.

Pennsylvania Beekkeepers....

Send to Prothero for It

Distributor of Root's
Goods for State

Standard Hives
Buckeye Hives
Hoffman Frames
Sections
Foundation, Etc.

Immediate Shipments by
Freight, Express, or Parcel Post. No Embargoes.

John N. Prothero, Dubois, Pa.

Formerly Prothero, Bailey & Goodwin

Jobber of Root's Goods for 20 Years

E. D. Townsend & Sons, Northstar, Michigan

Expect to harvest their usual crop of superior quality of extracted honey this season. As usual, it will be left on the hives until some time after the flow from clover is over before extracting. This will ensure a superior quality of honey, altho we will not get as many pounds in the aggregate. Then it will be put into new 60-lb. cans. In fact, our 40 years' experience in honey production is ample proof that this crop will be as good as or better than any other not produced with such painstaking care. If in need of a fine quality of extracted honey say how much you can use and we will be pleased to quote you a price, as soon as ready for the market, which will be the last of this (July) month.

WHEN YOU THINK OF BEEKEEPERS' SUPPLIES THINK OF INDIANAPOLIS

We carry a complete line of Root's goods and we solicit your trade. Our slogan: Courteous treatment and prompt service. Catalog for the asking.

THE A. I. ROOT COMPANY (Indianapolis Branch) 873 MASS. AVE.

Lewis Bee Supplies—Dadant Foundation

A full line of supplies for the practical bee men at your command. Additional information to beekeepers gladly supplied upon request.

A Post Card Will Bring Our Catalog—Write Dept. C.

Western Honey Producers :- Sioux City, Iowa

DOLL SAYS

don't invite Disappointments by delay in ordering your Honey Containers. Make sure of having all the Cans and Bottles you will need, by ordering them NOW. I am splendidly prepared to fill all orders for Friction Top Cans of 3 lbs. to 10 lbs. capacity—5-gallon Square Cans—and ½-lb. to 3-lb. white flint glass Screw Top Honey Bottles. Standard-grade goods, at prices that will interest you.

AN EASY WAY TO SAVE MONEY

You can save 15 per cent to 20 per cent on the cost of your Honey Cans and Bottles this year, by ordering them from DOLL—and instructing us to ship direct from factory to you.

I am also ready to make prompt shipments of anything wanted in the way of White Pine Hives, supers, extractors, Foundation, and other Supplies—none better to be had in either Style, Quality or Construction.

BE ready when the Honey begins to flow, by GETTING ready NOW.

Be sure to get my price quotations before ordering this year's Supplies.

P. J. DOLL BEE SUPPLY CO.

NICOLLET ISLAND

MINNEAPOLIS, MINN.

HERE THEY ARE, MR. BEEKEEPER, AT NEWARK

Wayne County, New York, ready to answer your call, the best of everything !!

Just Read This List

Lewis Beeware, Sections, Shipping Cases, Frames, Hives, Hershiser Wax Press, and other supplies.

Dadant's Unexcelled Foundation, all standard weights and sizes. Also the Electric Wire Imbedder.

Bingham Uncapping Knives, including steam-heated with oil stoves and generators.

Bingham Smokers, all sizes, with genuine leather bellows.

Root's Extractors, all sizes of hand and power Machines.

Bee Books written by all leading authors in beedom.

All Sizes of Friction-top Pails and also 60-pound Cans, new and second-hand. Also Cement-coated Nails for nailing beehives and supplies.

All-sized Spools of Tinned Wire, Bee Brushes, Feeders, Queen-rearing Cages, Bee Gloves, Capping Melters, and all practical supplies you will need.

A Market for your Honey or Wax, and a plant to render your Old Combs and Cappings.

Over 1,000 Beekeepers took advantage of this Service Station at Newark in 1919, for the first time. Now *all together* for a greater 1920.

New Catalog Free, and Our Discounts Will Save You Money. Address

The Deroy Taylor Co., :- Newark, Wayne Co., New York

SELL YOUR CROP OF HONEY

TO

HOFFMAN & HAUCK, INC.

WOODHAVEN, N. Y.

NO LOT TOO LARGE OR TOO SMALL FOR US TO HANDLE

Mail Sample of Extracted, State Quantity and How
Packed and We Will Make You Our Best Offer

CONTAINERS FOR YOUR CROP

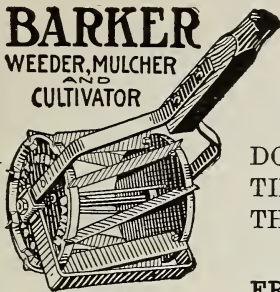
All Sizes, Glass or Tin

2½-lb. Pails, per case of 24.....	\$1.80 each	Crates of 100.....	\$7.00
5 -lb. Pails, per case of 12.....	1.65 each	Crates of 100.....	10.70
10 -lb. Pails, per case of 6.....	1.35 each	Crates of 100.....	17.00
White Flint Glass Quart Jars (3 lbs. honey) with gold lacquered screw caps, per case of 12.....			1.10
5-Gallon Tins, used, good condition, 2 tins per case.....			.60

HOFFMAN & HAUCK, Inc. :- :- WOODHAVEN, N. Y.

BARKER

WEEDER, MULCHER
CULTIVATOR



Weeds and Mulches In One Operation

DOES BETTER WORK THAN A HOE—TEN TIMES AS FAST—SAVES TIME AND LABOR, THE TWO BIG EXPENSE ITEMS—EASY TO OPERATE.

FREE—Illustrated Book and Factory-to-User Offer

We want every garden grower to know just how this marvelous machine will make his work easier and increase his profits. So we have prepared a book showing photographs of it at work and fully describing its principle. Explains how steel blades, revolving against a stationary knife (like a lawn mower) destroy the weeds and at the same time break up the crust and clods and pulverize the surface into a level, moisture-retaining mulch.

“Best Weed Killer Ever Used”

LEAF GUARDS—The Barker gets close to the plants. Cuts runners. Has leaf guards; also easily attached shovels for deeper cultivation—*making three garden tools in one.* A boy can use it. Five sizes. Send today for book, free and postpaid.

BARKER
MFG. CO.
Dept. 10

DAVID CITY, NEB.

Gentlemen. — Send me postpaid your free book and Factory-to-User Offer.

BARKER MANUFACTURING CO.

Dept. 10

David City, Nebraska

Name _____

State _____

Town _____

R. R. No. _____

Box _____

QUEENS

FROM SELECT BREEDING

Twenty Years of Experimenting. We have nothing but the very best.

3-Band Only

Price Cash With Order

Before July 1st

Untested	- - - - -	\$1.50
Selected	- - - - -	2.25
Tested	- - - - -	3.00
Selected	- - - - -	3.50

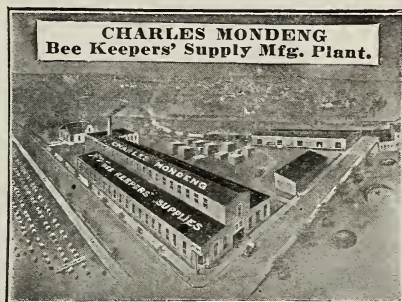
Orders filled in rotation.
Write for prices in large quantities.

Did you get what you were looking for when you bought your last year's Queens? If not, try one that will please you. My queens are reared on a new system, large and prolific, surpassed by none but superior to many.

F. M. RUSSELL

ROXBURY, OHIO R. F. D. No. 2

BEE SUPPLIES



The largest and oldest Bee Supply manufacturer in Minnesota can offer you bee ware that will keep that "satisfied smile" on your face. Excellent quotations given on frames, spacing or unspacing. Send for my 1920 Catalog and Price List. **Think** it over and in thinking be wise and save money by placing your orders before the rush is on. Will Take Beeswax in Trade at Highest Market Prices.

CHARLES MONDENG

146 Newton Ave., N. Minneapolis, Minn.

Right Prices

Prompt Shipment

Quality Goods

"Thru Your Success We Prosper."

Do you need any Bee Supplies or cans and cases? We have a big stock of both. Altogether we have shipped twenty full carloads of Bees, Bee Supplies and Honey Containers this year. Let us count your business in on the big total! We can handle your honey crop to your satisfaction. Write us today.

*"He Profits Most
Who Serves Best."*

The Foster Honey and Mercantile Company
Boulder, Colorado

Queens Bees by the Pound Queens

The rush of our bee-shipping season will practically be over by July 1st; we will then be in position to take care of your QUEEN orders.

Just received a picture from a party showing a colony built up from about 2 pounds of bees and a queen last spring, 1919, and then weighed 330 pounds gross; others in the yard did better than that one. We have had colonies here gather 400 pounds spring crop.

A party wrote from Chicago: "The shipment of bees was received on May 7th this year, hived same day; did not examine until 18th, when we found all queens accepted and they had laid in three frames. We greatly appreciate receiving such good grade of bees and hope to favor you with larger orders in the future." Another from Nebraska: "Wish to tell you how well pleased I am with the business done with you; some of the 50 packages had less than 100 dead bees in them. Those queens of yours are the best uniform QUEENS I have ever received. What is your price on 200 2-pound pkgs. with queens for spring 1921?" Our QUEENS are hardy gentle Italians; they grow bees that fill the supers. GUARANTEE safe arrival and satisfaction on QUEENS. With my method of feeding can ship bees successfully in July and August. Get a few packages and build them for the fall flow or winter. Send for FREE Circular giving reference, prices by Parcel Post, Nuclei, Guarantee, etc. Twenty years a beekeeper.

Advertising, labor, and sugar have all advanced, yet we quote Bees and Queens July 1st balance of the year as follows:

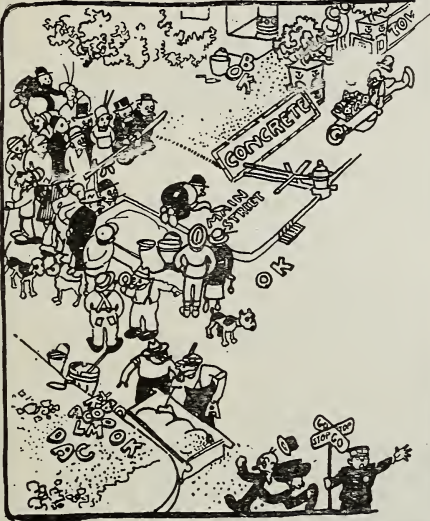
	1	6	12	50	100
Untested Queens	\$1.50	\$7.50	\$13.50	\$48.00	\$95.00
Select Untested Queens ..	1.65	8.25	14.85	52.80	104.50
Tested Queens	2.50	13.50	27.00	110.00	
Select Tested Queens	3.00	16.20			
1-pound pkg. Bees			\$2.40;	25 or more	\$2.16 each
2-pound pkg. Bees			4.25;	25 or more	3.83 each
3-pound pkg. Bees			6.25;	25 or more	5.62 each

Add price of queen wanted when ordering bees.

NUECES COUNTY APIARIES -- CALALLEN, TEXAS

E. B. AULT, Prop.

A RED LETTER DAY IN CONCRETE TOWN



That Sign for Your Apiary

SHOULD BE MADE
THIS SPRING!

We will mail you on application a small folder on how to make your own signs by using our all-weather-proof burned clay letters. They can be used on buildings, walks, lawns or roadside.

Write for a "Red Letter
Day in Concrete Town"

UNITILE
REGISTERED TRADE MARK

The Unitile Co., Columbus, Ohio
Dept. B

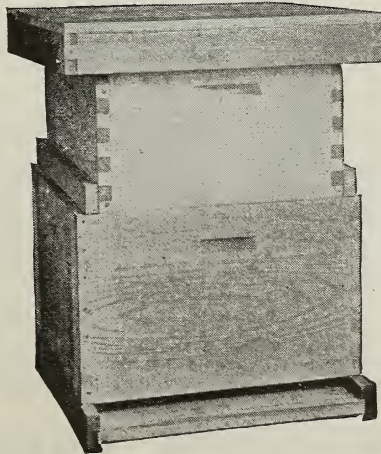
Your present brood equipment can be put above the Modified Dadant hive used as full depth supers.

Features are: Deep frames, large one-story brood nest, frame space ventilation, excellence in wintering, swarming easily controlled.

Glance at this illustration to compare this hive with "Standard" Langstroth hive.

You can get 40 per cent greater brood-comb area than in the "Standard" ten-frame Langstroth.

Modified Dadant Hive



Modified Dadant Hive Features.

1. Eleven frames, Langstroth length, Quinby depth.
2. Frames spaced $1\frac{1}{2}$ inches for swarm control.
3. Extracting frames $6\frac{1}{4}$ inches deep.
4. Dovetailed body, regular reversible bottom and metal roof cover with inner cover.
5. Langstroth "Standard" equipment easily used with this hive.

For free booklet write any distributor of Lewis "Beeware," or to

G. B. Lewis Company - - - - - Watertown, Wisconsin
Dadant & Sons - - - - - Hamilton, Illinois

ITALIAN BEES AND QUEENS

We are prepared to give better service in every respect than we have ever given in Bees and Queens and supplies

UNTESTED QUEENS

To June 15th		After June 15th	
1	\$1.50	1	\$1.25
12 or more	1.25	12 or more	1.00

TESTED QUEENS

To June 15th	\$3.00	After June 15th	\$2.00
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BEES

1-pound packages	\$3.00	2-pound packages	\$5.50
----------------------------	--------	----------------------------	--------

We will furnish one comb filled full of brood with one pound of bees for \$5.50, no queen. You are almost sure that these will reach you in perfect shape. You get a 50c comb; they will build up much quicker than a 2-pound package. There is no danger of their swarming out.

NUCLEI

1-frame	\$4.00	2-frame	\$7.00	3-frame	\$9.50
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No queens included at above prices.

Nuclei are on good combs, full of brood with plenty of bees.

FULL COLONIES

We can furnish, and can ship on date specified, full colonies of bees in new hives, good comb, and good strong colonies with **Tested Queens**:
 8-frame \$18.00 10-frame \$20.00

DR. MILLER'S QUEENS

Let's make this a Miller queen year. Dr. Miller has furnished us breeders from his apiaries, and we are the only ones that he furnishes breeders to. In these queens you get the fruits of the foremost beekeeper of the world. We pay Dr. Miller a Royalty on all queens sold.

To June 15th		After June 15th	
1	\$2.00	1	\$1.50
12 or more, each	1.60	12 or more, each	1.25

We carry a full line of Root's supplies, including the new Root-Weed foundation, Prompt Service.

THE STOVER APIARIES

Successors to
THE PENN COMPANY
 Penn, Miss.

MAYHEW, MISS.

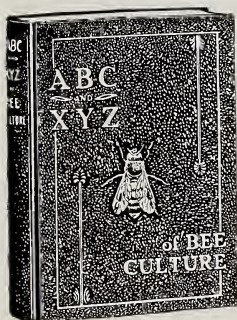
A GREAT SALES RECORD

—OF—

A GREAT BEE BOOK

Here is a record for the sale of a standard class book, not often equaled in any field, and never approached before by any bee book :

On July 1, 1919, one year ago, this Company completed the printing and binding of 10,000 of the 1919 edition of the



On May 1, 1920, these 10,000 copies of the world's greatest bee book had been exhausted. A new issue of the 1919 edition is now completed, and we are again filling orders for the same. It is the indispensable book to every up-to-date beekeeper everywhere.

The A. I. Root Co.

Medina, Ohio.

A QUESTION AND AN ANSWER

When they had unpacked their first carload of Lewis "BEE-WARE," a concern who had never had our goods before was written to as follows :

OUR QUESTION

Watertown, Wisconsin,
May First, 1920.

Kanawha Seed Company,
617 Virginia Street,
Charleston, W. Va
Gentlemen:—

When it becomes a part of our duty to go out and guarantee on our personal word the quality of Lewis "Beeware," we feel it is also our duty to make sure that the customer is satisfied. Do you feel that the carload of Lewis "Beeware" which you have received comes up to the standard of quality which you were assured it would reach?

Yours very truly,
G. B. LEWIS COMPANY.

THEIR ANSWER

Charleston, W. Va.
May 5, 1920.

G. B. Lewis Company,
Watertown, Wisconsin.
Gentlemen:—

Answering your favor of first inst. Beg to state that the quality of Lewis "Beeware" is fully up to our expectations, and, furthermore, we believe that the workmanship thereof is a little better than usually found in any other make of beekeepers' supplies ever handled by us.

Yours very truly,
KANAWHA SEED COMPANY.

Beekeepers, this is the experience of thousands. Our interest continues after you get our goods. Use our Service Department for beekeeping queries.

Look
For



This
Mark

G. B. LEWIS COMPANY
WATERTOWN

WISCONSIN

Makers of famous Lewis "Beeware."
Branches and Distributors everywhere.